RAILROAD GAZETTE

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CONTENTS

ILLUSTRATIONS:	PAGE.
Officers of the Joint Traffic Association (with an inset)	333
Electric Equipment of the Lake Street Elevated, Chicago	333
The Barber Truck on the Chicago, Milwaukee & St. Paul	336
The New Baltimore & Ohio Station in Baltimore	338
Price's Safety Frog	343
A Combined Punch and Straightener	343
EDITORIALS:	
The Joint Traffic Association	340
The 109th Street Collision	341
The Reports of the Lake Shore and the Michigan Central	341
EDITORIAL NOTES	340-342
New Publications	342
Trade Catalogues	342
GENERAL NEWS:	
Car Building	346
Bridge Building	346
Meetings and Announcements	346
Personal	347
Elections and Appointments	348
Railroad Construction	348
Electrical Railroad Construction	349
General Railroad News	349
Electrical Railroad News	350
Traffic	350
MISCELLANEOUS:	
Technical	344
The Scrap Heap	345
The Government's Argument in the Joint Traffic Association Injunction Suit	334
Heavy Engines and Big Cars	336
History of Electric Locking of Railroad Signals	337
Railroad Matters in England	338
Compressed Air Moters for Street Railroads	338
The Abatement of Dust	343
Foreign Railroad Notes	313
Conveying Belts and Their Uses	344

Officers of the Joint Traffic Association.

[WITH AN INSET.]

The Joint Traffic Association, the rate-regulating body which was organized last December by the principal railroads between the Atlantic Seaboard and Chicago, has now for four months maintained reasonable and stable rates on freight and passengers more successfully than has been done before for years, and better, in some respects, than even a pool, by itself, would be likely to do. This important body has come to be a prominent figure before the public and a very important element in the business of the nation, and it is time that the members of the Board of Managers, who do the work of the Association, were better known. We give, therefore, in this issue the portraits of the Managers, together with those of the Arbitrators and the Commissioner.

The ruling power in the Association is the "Board of Control," composed of the presidents of the 30 roads which are members, but this Board meets only occasionally, as may be found necessary. But the Board of Managers is a regular working body, sitting, as a rule, four or five days every week, and it does the active and laborious work required to settle (or to adjust in the best practicable way) the difficult questions connected with competitive rates on the large volume of traffic subject to the action of the Association. These men will receive most of the credit for whatever success may result from the action taken by the Association, and upon their heads is visited the invective of the Western reporter whenever he deems it his duty to voice the sentiments of some shipper who objects to having his rate-cutting tricks interfered with by the down-east aristocrats.

The fact that the Managers are always in session, thus making it possible to keep a constant watch upon the competitive traffic questions connected with the every-day business of the roads, by competent men, representing every important interest, and empowered to act without delay is, indeed, the new and unique feature of this Association, and the one which has most definitely contributed to its usefulness. In the absence of a pool, under which competition would in large measure, "regulate itself," this constant negotiation between the competitors is, indeed, the only instrumentality yet discovered whereby rates can be kept even tolerably stable.

The Arbitrators of the Association have as yet had little or nothing to do. The possibility that this would be so was seen very early in the proceedings under the agreement, and the purpose to have the Board constantly in session was given up; and only one of the three members, Mr. Goddard, remains regularly in New York.

The Board of Managers has power to appoint three commissioners, but thus far has appointed only one, Mr. Blanchard.

The offices of the Association are at 143 Liberty street, New York City.

John Burton (Grand Trunk) was born at Gorton, near Manchester, Eng., in 1841. He entered the service of the Great Western of Canada in 1862 in the General Manager's office, and held various positions in the service of that road until 1881, when he was appointed Assistant Manager of the Detroit, Grand Haven & Milwaukee. Subsequently he became Superintendent of the Great Western of Canada until it became merged in the Grand Trunk system. From 1883 to 1886 he was Assistant to the President of the Chicago & Grand Trunk and Detroit, Grand Haven & Milwaukee, when he was nominated Secretary-Treasurer of the New York, Ontario & Western, and was for a short period its General Manager. In 1890 he returned to the Grand Trunk as General Freight Agent, which office he held until appointed to represent the Grand Trunk on the Board of Managers.

George G. Cochran (Erie) was born in Sandusky, O., in 1842. He began his railroad service as Freight and Ticket Clerk on the Cincinnati, Dayton & Eastern in 1858. For several years he was on the Atlantic & Great Western and in 1871 became Assistant General Freight Agent of that road. He was soon promoted to be General Freight Agent and in 1887 became Western Freight Traffic Manager of the Erie at Cleveland. He became Traffic Manager of the Erie in February, 1893, and on the reorganization at the beginning of the present year he was made Fourth Vice-President.

John Biddle Garrett (Lehigh Valley) was born in Philadelphia in 1836. His first railroad service was in 1874 as Auditor of the Lehigh Valley. In 1884 and subsequent years he was Chairman of the Reorganization Trustees of the Philadelphia & Reading and in 1887 became Third Vice-President of the Lehigh Valley.

David Simpson Gray (Pennsylvania), was born in Sussex County, Del., in 1829. He began his railroad service as Clerk on the Cleveland, Columbus & Cincinnati in 1850. He was General Freight Agent and held various other offices on the Central Ohio Railroad and other lines in that region, until in 1864 he organized the operating department of the Star Union Line. In 1869 he became Second Vice-President of the Pittsburgh, Cincinnati & St. Louis, and held other positions in the Pennsylvania system until 1872, when he went back to the Union line. Since 1887 he has been Manager of that line and General Agent of the Pennsylvania at Columbus.

Horace John Hayden (Vanderbilt System), Chairman of the Board of Managers, was born at Boston, Mass., in 1840. Seven years of his early life, from 1861 to 1868, were spent in the regular army as Lieutenant and Brevet Major of Artillery, and he entered the service of the Chicago, Burlington & Quincy as clerk at Chicago, in 1868. For five years he was General Freight Agent, and for part of the time also General Ticket Agent of the Missouri River, Fort Scott & Gulf, and in 1873 became General Freight Agent of the Boston & Albany. He went from that road to the New York Central in 1880 as General Traffic Manager, and became Third Vice-President in 1883, and Second Vice-President in 1885.

Benjamin Arrosmith Hegeman (Delaware, Lackawanna & Western) was born in New York City. His entire railroad service has been on the Lackawanna road, beginning in 1869 as General Freight Agent. He was made Traffic Manager in 1884.

Milton Knight (Wabash) was born at Scio, N. Y., in 1836 and entered the railroad service on the Atlantic & Great Western in 1862. His first service in the general office was in 1870, and after five years' service on the Cincinnati, Hamilton & Dayton at Indianapolis he became Assistant General Freight Agent of the Wabash in 1878. He was made General Freight Agent in 1883, and Freight Traffic Manager when the road was reorganized as the Wabash Railroad Company in 1889.

Orland Smith (Baltimore & Ohio) was born in 1825 at Lewiston, Me. He began railroad service as Station Agent on the Androscoggin & Kennebec in 1849; in 1853 he went to the Marietta & Cincinnati, where he held various positions, until 1861, when he entered the army as Colonel of the Seventy-third Regiment, Ohio Volunteer Infantry. After the war he was a railroad contractor for several years, and in 1877 became General Superintendent of the Columbus, Hocking Valley & Toledo, being soon after made Vice-President and General Manager. He became connected with the Baltimore & Ohio as Third Vice-President in 1882 and was made First Vice-President in 1888. He has held prominent offices in the management of other roads controlled by the Baltimore & Ohio.

William Perry Walker, Jr. (Chesapeake & Ohio and Cleveland, Cincinnati, Chicago & St. Louis), was born at Newport, Ky., in 1850. His railroad service, beginning in 1878, has been mainly on the Chesapeake & Ohio. Besides his railroad service he was for several years General Freight Agent of the Cincinnati, Portsmouth, Big Sandy & Pomeroy Packet Co. For four years he was also Manager of the Kanawha Dispatch Line. He was made Freight Traffic Manager of the Chesapeake & Ohio Railway in 1890.

George Roberts Blanchard, *Commissioner* of the Joint Traffic Association, was born at Rochester, N. Y. He began his railroad service under his father, who was then Superintendent of the Cincinnati & Chicago, at Richmond, Ind., in 1858. In 1860 he went to the Ohio & Mississippi, and in 1862 was made General Freight Agent of that road. He subsequently held the same office on the Central Ohio, and then on the consolidated Baltimore & Ohio; and in 1872 was appointed General Freight Agent of the Erie, where he remained 12 years, being made Vice-President in 1874. He was the chief officer of the Central Traffic Association from 1886 until he was appointed to his present office by the Board of Managers at the beginning of the present year.

Arbitrators.

James Frederick Goddard, Chairman of the Board of Arbitration, was born at Brockton, Mass., in 1842. He served in the army during the civil war, his first enlistment being with the 45th Massachusetts regiment He was in the quartermaster's department for the last two years of the war, and continued in it (in the civil service) until 1867, serving, after the war, at Fort Sedgwick, Col. Mr. Goddard entered railroad service in 1868 in the general freight office of the Chicago, Burlington & Quincy. In 1872 he was made Assistant General Freight Agent, and held other offices in the traffic department until 1878, when he went to the Atchison, Topeka & Santa Fe as General Freight Agent. Four years later he was made Traffic Manager of that road, and after serving as Assistant General Manager and General Manager, was elected Third Vice-President in 1888. In 1890 he was chosen Chairman of the Western Passenger Association, but after only five months' service in that position came to New York as Commissioner of the Trunk Line Association. This position he still holds. So far the Board of Arbitration, as such, has not been called upon to act.

Garrett A. Hobart was born at Long Branch, N. J., in 1844. He is a lawyer and capitalist of Paterson, N. J. He has long been prominent in the political life of New Jersey, and has been a member of both houses of the State Legislature. He is a director in the New York, Susquehanna & Western and the Lehigh & Hudson River, and has been receiver of several New Jersey roads during their reorganization. He is connected with important manufacturing establishments, banks and gas companies. Mr. Hobart is a member of the Executive Committee of the Republican National Committee, and Chairman of the Executive Committee of the Republican State Committee of New Jersey; and by a unanimous vote of the New Jersey State Convention held April 16 was recommended as New Jersey's candidate for the Vice-Presidency of the United States.

Edward Francke Leonard was born at Mansfield, Conn., in 1836, and entered the railroad service in 1869 as Secretary of the St. Louis, Alton & Terre Haute. His more active railroad work, however, has been as President and General Manager of the Toledo, Peoria & Western, which place he has held since 1885. His home is in Springfield, Ill.

Electric Equipment of the Lake Street Elevated, Chicago.

The change of motive power on the Lake Street Elevated from steam locomotives to electric motor cars is now the matter of but a few weeks, the electrical equipment of the road being practically completed. The third rail system is used similar to that on the Metropolitan, except in the manner of supporting and insulating the third rail, and in the feeders supplying the current.

The third rail in this case is carried on insulators, which are the invention of Mr. Chapman and Mr. Hanson, of the electrical department.

A photograph of one of the insulators with part of the top cut away to show the section is here reproduced, Fig. 1. It consists of three principal parts: first, a cast-iron top or cap which has flanges to hold the base of the rail, and a socket to hold an upright wooden cleat to which a guard board is fastened by screws. This socket does not appear in this photograph, as it was on the side which was cut away, but one of the flanges to hold the rail is shown. This cap terminates below in an apron having the form of an inverted cap, designed to exclude moisture. The second part is a hollow cast-iron hose which is fastened to the crossties with lag screws, and the third is a support between top and bottom castings, and is a ¾-in. bolt entirely encased in insulating material with the exception of the lower end, which is threaded with screws into the base. The insulation around the head of the bolt is threaded and screws into the cap, a thin layer of sulphur being between the cap and the insulation. As all the threads are right-handed there is no danger of working loose when the insulator is put in position. As has been said, there is a guard board fastened to cleats on the insulators. There is also another guard board on the other side of the conductor rail, the top edges of both boards projecting above the crown of the rail. This will prevent contact with the rail unless it is intentionally made, and will do much to diminish the danger of accident by a person falling and touching the rail.

The feeders are copper cables laid on terra cotta insulators instead of rails bonded together, as is the practice on the Metropolitan. The road is divided into three sections as regards these feeders, the power for each section being obtained from a different source. As has been mentioned before in this journal, this road will rent its power instead of having a power house of its own. The first section is from State street west to the river, and power is furnished from the Hawthorne power house of the North Chicago Street Railway Company. The second section from the river west to Forty-fourth street is supplied by the Western Avenue power house of the West Chicago Street Railway Company, and the third section from Forty-fourth street to western terminal by the Cicero & Proviso Railway Company. Arrangements have been made so that in case of failure of power on one section, the road can be worked by power from the adjacent section.

The motor cars are 30 in number and have been converted from the ordinary cars now in use on the road, the necessary changes being made by the Wells & French Company. As reconstructed they are very similar in appearance to those used on the Metropolitan. The trucks for these cars are by three makers, the McGuire Manufacturing Company of Chicago furnishing 50, the Baldwin Locomotive Works 8, and the J. G. Brill Company of Philadelphia 2. The motors used are the G. E. 2,000, two of these per car, and both motors on the same truck.

Fig. 2 shows the guard rail clearances. This illustrates the necessity for short pedestals and the difficulty in clearing the guard-rails and bolt heads. The trucks are required to have both a lateral and vertical motion, or what is equivalent to a swing bolster instead of a rigid one. The wheels are 33 in. in diameter and have

steel tires. In putting the trucks under the cars, the Baldwin trucks are used entirely for motor trucks, and therefore are under eight cars, the McGuire trucks being used under the opposite ends. The two Brill trucks are under one car and the remaining 21 cars are equipped entirely with the McGuire trucks.

The truck furnished by the Baldwin Locomotive Works is similar to the one illustrated in the *Railroad Gazette* of March 6, page 156, with the exception that the bolts holding the jaws of the pedestals together are here omitted owing to the necessity of clearing the bolt heads on top of guard rails. The lower ends of the pedestal jaws are cut off and have straps lipped up over their ends to replace the bolts. This truck was thoroughly described by us before. It is of an exceedingly strong design and well adapted to stand the strains arising from the motors.

The McGuire truck is illustrated by photographs, Figs. 3 and 4, and by the drawing, Fig 5. The spread of the trucks is 5 ft. 6 in. and distance between side frames 6 ft. 7¼ in. It is of the same type as those used on the motor cars for the Brooklyn Bridge, and built by the same company. The specifications call for trucks to have both a lateral and vertical motion. To get this lateral motion, the McGuire Manufacturing Company does not use a swing bolster, but fastens the bolster rigidly to the frames, and then allows the jaws of the pedestals a motion of 1⅛ in. in either direction between the lugs on the sides of the journal boxes. These side frames are made of malleable iron, cast by the National Malleable Castings Company. The pedestal jaws are open at the bottom and have wrought iron straps passing beneath the journal boxes and bolted to the ends of the jaws. To make the connection stronger these straps are lipped at the ends. At the center of these frames, on the inside, are pockets to receive the bolster, the under side of which projection forms the seat to receive the upper bearings of the elliptic springs.

The bolster is made of two 1-in. × 10-in. wrought iron plates spaced 10 in. apart at the center and bent as shown by the illustrations. The ends of the lower plate are turned over on themselves, and form stops against which the ends of the upper plate rest. These joints are fitted exactly. Between the plates at the center and near the ends are castings to keep the plate correctly

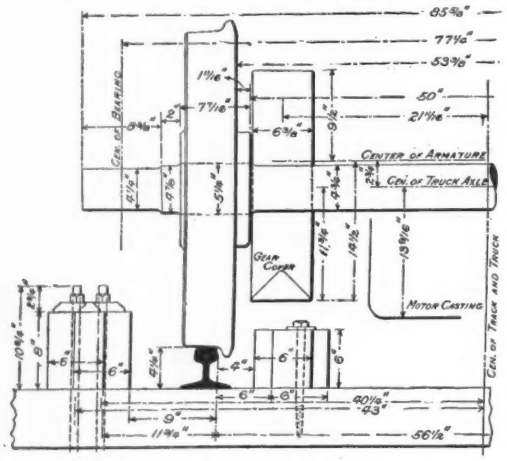


Fig. 2.—Guard Rail Clearances.

spaced. These are held by bolts passing through both plates. The bolts holding the end castings are used also to secure the side bearings. The ends of the bolster fit into the pockets in the side frames and are rigidly bolted to them. By this construction the bolster and side frames are made integral and have both vertical and lateral motion.

The equalizer bars are of 1⅛-in. × 4¾-in. wrought iron, having a similar shape to those on ordinary passenger car trucks. The ends of these equalizers, however, instead of resting directly on the journal boxes, rest on the top of a spring seat, short coil springs being interposed between these seats and the boxes. Four of these equalizers are used, two on each side of the side frames. Fastened to these equalizers are two cross bars of 1⅛-in. × 4¾-in. wrought iron, which serve not only to keep the equalizers spaced, but also to carry the motors and spring plank hangers. The spring plank is swung at the ends from the cross bars, and has double elliptic springs at each end between it and the side frame projections or pockets which hold the bolster. Between the equalizers and side frames are coil springs such as are commonly used in passenger truck construction.

The brakes are inside-hung, and are carried on each side directly from the side frames, as shown. They are equalized, and no brake beam is needed with this construction. The hangers are castings, and form also the heads to carry the shoes and levers to which the bottom rods are attached. The tops of the hangers are beveled, and small coil springs in compression release the brake from the wheels. See Fig. 5.

The Brill truck is radically different from both the preceding ones, and has more the appearance of a truck for street railroad service. It is illustrated in Fig. 6. The side frames are each single castings of steel, the top member being in one piece and the bottom one divided into two parts to leave space for the equalizing bar, which in this case fits into a pocket in the lower part of the journal box. These frames have projections on the outer jaws of the pedestals, to which are fastened T's, serving the double purpose of keeping the frames in line and affording a support for the brake beam hangers. This is necessary, as the brakes on this truck are outside hung. They are equalized and have M. C. B. shoes. Steel angles bolted to the side-frames form the transoms of this truck, and are the support both for the spring-plank hangers and also for the hangers carrying the motors.

The bolster is of the ordinary swing type and is made of oak. It is supported on triple elliptic springs which rest on an ordinary wooden spring plank. Double coil springs transmit the load to the equalizing bars. By having these bars rest in pockets below the boxes, it is possible to place these springs much nearer the boxes than with the ordinary construction in which the equalizers rest on top of the boxes.

A feature has been added to these trucks which does not appear in the photograph—it is safety hangers to catch the equalizing bars should they break. These hangers are merely straps attached to the top member of the side frames and passing beneath the equalizers. These three trucks are used for the purpose of comparison.

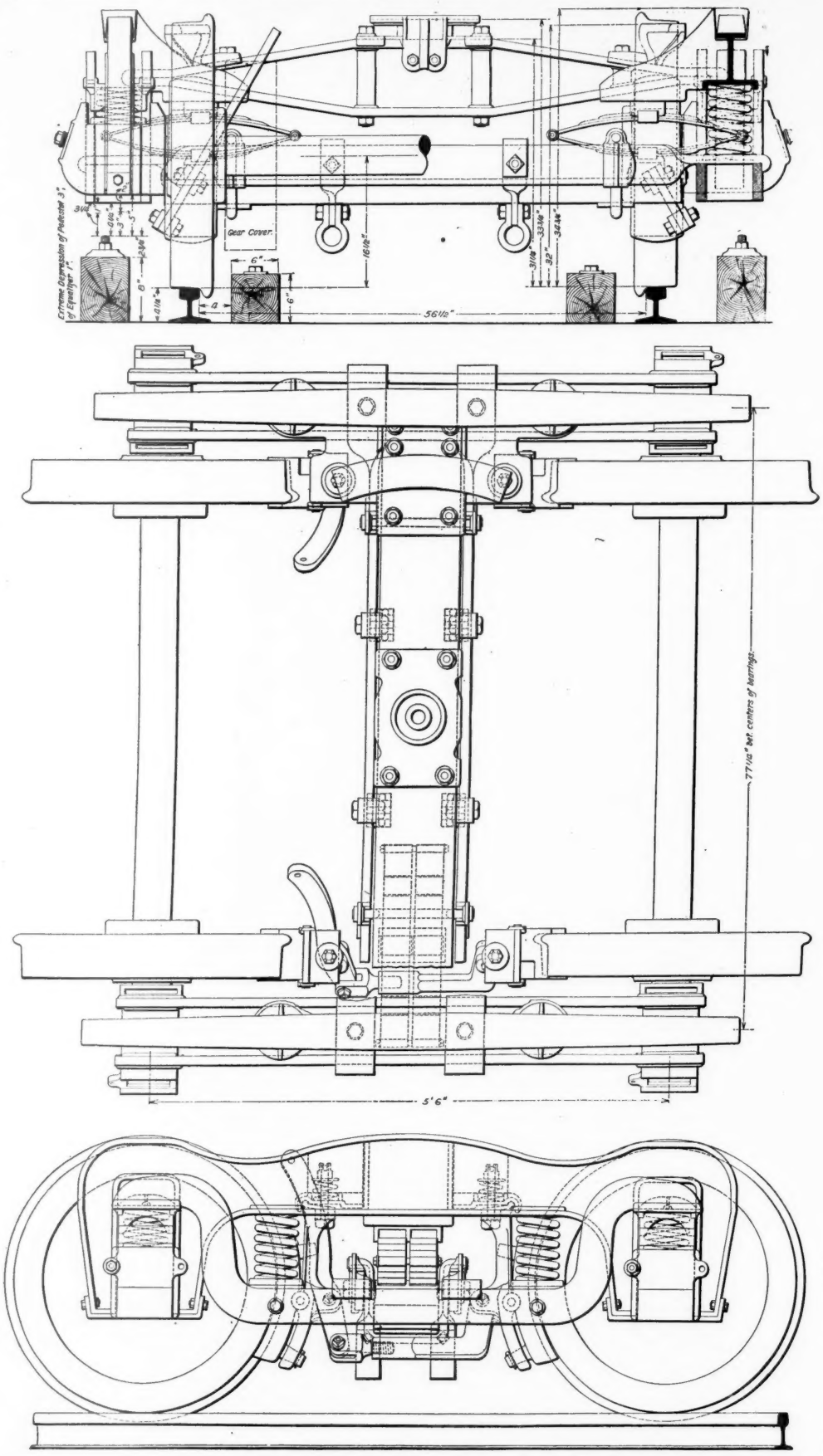


Fig. 5.—Electric Motor Truck for Lake Street Elevated Railroad, Chicago.

Built by the McGUIRE MANUFACTURING CO., *Chicago.*

The Government's Argument in the Joint Traffic Association Injunction Suit.

In the suit of the United States against the Joint Traffic Association, and the roads composing it, to have the agreement of the association declared null and void, the argument of Mr. Wallace Macfarlane, District Attorney, in the United States Circuit Court, where the suit is now pending, has recently been printed; and we give below its salient points. It is an able and comprehensive presentation of the Government's side of the case and fills a pamphlet of 100 pages. The bill of complaint averred that the agreement provides for the pooling of freights of competing railroads, thus violating the Interstate Commerce law; that it is a combination in restraint of commerce between the states and to monopolize a part of the commerce among the several states; that the contract is an unlawful obstruction to interstate commerce, and that, therefore, the Government has a good cause of action in equity, irrespective of the statute.

In Mr. Macfarlane's summary there are eight heads. The first four have to do with legal technicalities. The fifth asserts that the agreement is for the pooling of

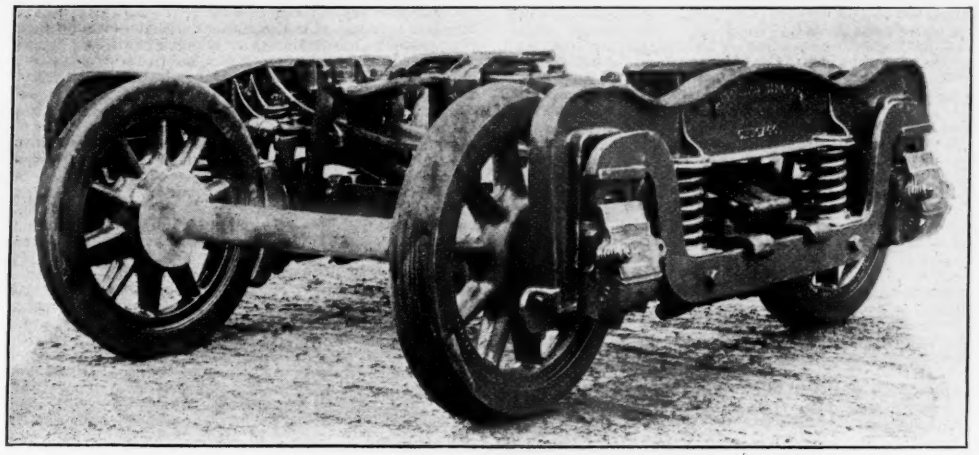


Fig. 3.—McGuire Truck—Lake Street Elevated.

freight and thus unlawful, whether pooling *per se* be right or wrong. Pooling is any agreement to apportion competitive business without competition. This is shown by the writings of the best-informed experts and by the Congressional history of the Interstate Commerce Law; pooling contracts have been almost invariably held to be illegal in American courts. The lawfulness of the agreement depends not upon what it has done, but what it may do. "As far as may be legally done" does not affect the main issue. Under the sixth head it is claimed that the anti-trust law of July 2, 1890, applies to railroads; that the contrary argument receives no support from the proceedings in Congress; that under the court decisions the test of validity of a contract in restraint of interstate commerce is the reasonableness of the restraint; that the articles of the organization constitute evil which it is designed to remedy, and for this the court may properly look at contemporaneous events. When the law was passed there were traffic pools and money pools. The essential feature of the former is an arrangement for the apportionment of competitive traffic, in shares, arrived at without competition. The writings of Judge Cooley in 1887 and in 1889, of Professor Hadley in 1886, and many others, are quoted to show that Congress, in passing the anti-pooling law, had in mind any or all of the agreements in vogue up to that date to maintain rates; to divide the field; to divide the traffic, or to divide the earnings. Albert Fink is quoted to show that an agreement cannot be maintained without a pool.

To show that pooling contracts were always held illegal the argument quotes the following decisions: Chicago, Milwaukee & St. Paul vs. The Wabash, etc., Ry. Co., 60 Fed. Rep., 993, C. C. A. Eighth Circuit, May 7, 1894; C., C., C. & G. vs. Closser, 126 Indiana, 348; Gulf, Colorado & Santa Fe vs. Texas, 72 Texas, 404; Texas Standard Oil Co. vs. Adowe, 83 Texas, 650; Texas & Pacific vs. The Southern Pacific, 41 Louisiana Annual, p. 970; Gibbs vs. Consolidated Gas Co., 130 U. S., 396; Anderson vs. Tett, 89 Kentucky, 375; Emery vs. Ohio Candle Co., 47 Ohio St., 320; Morrill vs. B. & M., 55 N. H., 531; Morris Run Coal Co. vs. Varclat Coal Co., 68 Pa. St., 173; Stanton vs. Allan, 5 Denio, 434; Denver vs. Atchison, 15 F. R., 651, U. S. C. C. Dist. of Colorado; Central Trust Co., of New York, vs. Ohio Central, U. S. C. C. N. D. Ohio, 23 Amer. and Eng. R. R. Cases, Vol. 23, p. 666.

Topic 5, sub-head 5.—The lawfulness of the agreement depends not upon what has been done, but on what might be done. Here is cited the opinion of the United States Supreme Court in the case of Pearsall vs. Great Northern Railway (16 Supreme Court Reporter, 705). The consolidation of competing railroads was in that case held unlawful whether it had the effect to harm the public or not. It is enough that the proposed consolidation had the power to give it that effect. Numerous other decisions are quoted in the same line. The Board of Managers of the Joint Traffic Association has power to fix rates arbitrarily and uninfluenced by competition. The agreement says that the Board is to "recommend" rates. But a recommendation, failure to observe which is a violation of the contract, is tantamount to a power to establish. It means the same thing. Every company has surrendered absolutely to the Board its power to fix its own competitive rates. To fortify this point, the argument quotes the clauses authorizing the managers to establish joint agencies, to forbid certain agencies and to define the powers of agents appointed by individual roads. The managers are charged with the duty of securing to each company equitable proportions of the traffic, so far as can be legally done. The effect of this clause of the agreement is that competition in rates is entirely suppressed while the parties abide by the contract, and failure to so abide incurs a penalty of $5,000, and in some cases more. Here we have a complete contract to fix rates and to abide by them in absolute suppression of competition. According to all preceding experience, if the writings of railroad experts are to be accepted, those disciplinary provisions, however severe, would not have been sufficiently effective to compel obedience to the agreement. According to all experience the pooling arrangement would be absolutely necessary to enforce observance of the rates established by the managers. The qualification "as far as may legally be done" is immaterial. This wholly unlawful power to pool freights may not be lawfully exercised at all. Here the District Attorney takes up the argument of the defense that this agreement to give the weak roads a share of the business was necessary to prevent ruinous rate wars; and he holds that for the managers to do this by granting differential rates would be none the less unlawful. The unlawful thing is that the parties have agreed to cease to compete; what difference can it make what means the managers adopt to carry out this power? A covenant to perform an act in restraint of trade "as far as the law allows" has been held too vague to be enforced, and the court held that it could not be asked to define

Fig. 1.—Insulator—Lake Street Elevated.

an unreasonable restriction of competition. A disastrous condition of business, if caused by illegal acts, cannot be a basis upon which to determine the reasonableness of railroad agreements. A contract in unreasonable restraint of competition is restrainable in equity by the suit of the Attorney-General to protect the public right to free competition. The railroad argument that the contract is not an unreasonable restraint is insufficient. The Interstate Commerce law does not make aggreements of this kind necessary, as defendants claim.

Under the fifth head, "The Merits of the Case." Mr. Macfarlane's argument, citing a multitude of decisions, takes up 40 pages. He alleges that the railroads formed this association to terminate all competition; they unlawfully agreed to surrender the control of traffic to the Board of Managers and to abandon independent soliciting agencies; they agreed to unlawfully combine a large part of their freight business. Previous to the agreement the roads were actively and independently competing, to the great advantage of the public both in facilities and in rates.

For eight years previous to 1887 the railroads argued that pooling was necessary; Congress then passed a law forbidding it, and for eight years since Congress has, with determined purpose, refused to modify or repeal this law. Under the second sub-head of topic 5, counsel asks: "What is a pooling of freight?" Decisions are here cited from the United States Supreme Court to the effect that a guide to the meaning of a statute may be found in the such a limitation. If the peremptory provisions of law can be thus evaded the whole statute is rendered ineffectual.

The defendants claim that this is not a pooling contract because there is no arrangement for definitely apportioning shares. But the district attorney holds that Article 8 does clothe the managers with the power to determine what is for each road an equitable proportion. The clause concerning fines and that concerning dealings with roads outside the agreement are also "characteristic of pooling agreements."

Under Topic 6, the attorney takes up the anti-trust law. To show that it should apply to railroads he quotes the proceedings in Congress while the bill was pending. He then goes on to maintain that the agreement is an unreasonable restriction. It applies to competitive traffic only, it suppresses competition in rates, it suppresses all competition by the power it gives to the managers; it provides for enormous penalties, it makes each party deposit a large sum of money, it provides for disciplining outside roads, and it gives the managers unlimited discretion in respect to expenses. In the Trans-Missouri case, emphasized by the defendants, the court had to

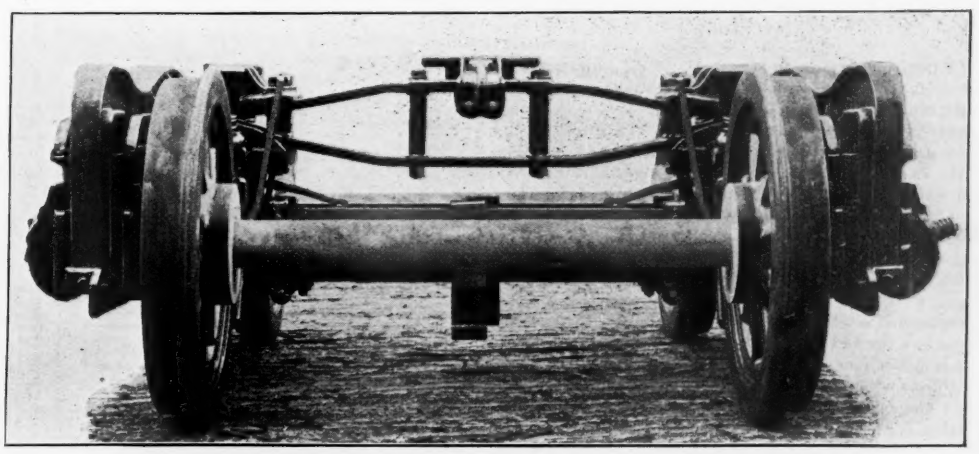


Fig. 4.—McGuire Truck—Lake Street Elevated.

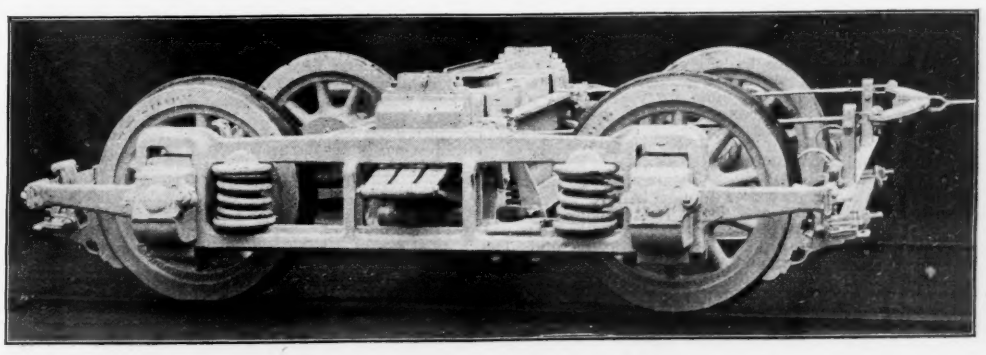


Fig. 6.—Electric Motor Truck for the Lake Street Elevated Railroad.

Built by the J. G. BRILL COMPANY, *Philadelphia, Pa.*

deal with a much more moderate contract. That contract affected competition in rates only. The court in that case held that "each road was left free to compete with every other," presumably meaning that they were left free to compete in every way except by reducing rates. The Joint Traffic Association agreement is admittedly to some extent in restraint of competition, but the railroads allege that this applies only to illegitimate and ruinous competition. They deny that the unrestrained competition formerly prevailing was to the advantage of the public and they aver that they intend to continue what they call legitimate competition, and do not intend to deprive the public of any of the facilities and advantages heretofore enjoyed. The substance of the railroads' arguments on this point is that with free competition railroads will destroy each other. But it is admitted that the bad condition of affairs was produced by the misconduct of the railroad managers. In spite of all this the public has a right to free competition and freedom from monopoly. If competition is virtually stopped the result is not a restriction, but a suppression. The roads all agree to abide by the rates established by the managers. So long as they do this there can be no competition in rates. If a road refuses to comply that would mean its withdrawal from the agreement, but the power to withdraw or to refuse to maintain rates does not make the agreement any less a restriction so long as it is carried out.

Topic 8. The Interstate Commerce Law forbids discrimination. The defendants argue that competing railroads, as well as individual railroads, or the partners in a through line, must make their rates to conform to this clause. But the District Attorney says that this construction of the law is unwarranted. Congress intended to preserve, so far as the law was concerned, a condition of unrestricted competition. It does not regard *any* competition between rival roads as "illegitimate." The argument that unrestricted competition will compel the roads to break the law is not a justification, nor even an excuse. If each road and each joint line obey the law the law is satisfied.

The Barber Truck on the Chicago, Milwaukee & St. Paul.

We have received from Mr. J. N. Barr, Superintendent of Motive Power of the Chicago, Milwaukee & St. Paul, blue prints of the Barber truck, from which the engravings herewith are reproduced. This truck has been used for some time on the St. Paul, and concerning it Mr. Barr said, at the March meeting of the Western Railway Club: "We are at present building two hundred 60,000-lb. cars, and using a kind of compromise between the swing motion truck and the rigid truck, which is possibly known to all of you as the Barber truck, in which the sidewise motion is obtained by rollers on top of the spring. I cannot say anything as to the practical working of this truck, though it has been in use to a limited extent for the past five or six years. The reports from it are quite satisfactory. It gives a flexibility which is in my opinion equal to that obtained from the ordinary constructions of the swing motion trucks. . . . I would say for the Barber truck that the play of the cars in going around curves, etc., seems to be very satisfactory, and the motion a very nice one. Further than that I am unable to say anything about it."

The engravings are so complete that a detailed description is not necessary. It will be observed that the upper member of the bolster is a 12-in. channel and the lower member a 10-in. channel, with a cast-iron kingpost. Under the ends of the bolster are placed a casting and two rollers which transmit the load to the springs. The bearing surfaces for these rollers are so designed as to return the rollers to their central position after running through curves. The truck is more flexible than the rigid truck and yet simple in construction.

Heavy Engines and Big Cars.

Last February Mr. J. N. Barr read before the Western Railway Club a paper with a somewhat enigmatical title of "The Ninety and Nine." In that paper he set forth some of the particulars in which railroad officers are neglecting their duties toward the ninety and nine sheep that do not get lost, while caring for the one which is wandering. The paper was published at considerable length in our issue of Feb. 21, page 124. It was discussed at the March meeting of the Club, and we give below some parts of the discussion.

MR. WM. FORYSTH (C. B. & Q.): I will not attempt to discuss the general subject of Mr. Barr's paper, which relates to the overlapping interests of different departments of railroads, and which in our American practice he says are not working for the general good. I will take up only that part relating to locomotives and cars. The author says that many close observers to-day feel almost convinced that the economical limit in size and capacity of both cars and locomotives is exceeded in present practice. We get an idea of the author's views in regard to the weights of engines on the drivers in his discussion of Mr. McConnell's paper, printed in our January proceedings, where he says: "I do not believe in these locomotives with 22,000 and 23,000 lbs. to the drivers. I do not believe in locomotives with 15,000 lbs. to the drivers." And "I would like to have that 15,000 changed to 12,000 in my remarks." Accordingly we have the author's ideas of proper weight on locomotive drivers as about 12,000 lbs. per wheel.

In looking over a catalogue of the Baldwin Locomotive Works, published in 1881, I find that the maximum loads per wheel on the American type of engine, four drivers, was 12,250 lbs.—on 10-wheel engines, 10,666 lbs.; on Moguls, 12,500 lbs., and on 10-wheel engines 11,750 lbs. The average of these is about 11,540 lbs. Now the average of 10 Baldwin engines exhibited at the World's Fair showed weight on drivers 17,800 lbs., 60 per cent. greater than those used in 1881.

Mr. Barr speaks also of using the happy medium, and says that we should use that in regard to the weights on drivers and loading locomotives and the size of rails and in almost all other points, and that the railroads that will be held up as examples of good management are those which act on this principle of using a happy medium. Now, if we had acted on this principle in 1881, and adopted 12,000 lbs. as a happy medium, we would not have made any progress in the improvement of locomotives from that time on, because the weight on the drivers is the index figure which determines the size of any type of locomotive. . . . I think it will be generally admitted that all the increases which we have made in the size of boilers have always been attended with an increase in economy in coal.

Accordingly, the history, or rather the development of the locomotive in size has resulted in a gradual increase in weight on the driver, and at the present day we have, not only in this country but in foreign countries, a gradual increase in the weight on the drivers. On the German State Railway we find 16,400 lbs. per wheel; on the Southern Railroad of France, 17,400; in England, on the London & North Western, 17,360; on the Lancashire and Yorkshire, 17,500; on the Midland, 19,600; on the North Eastern, 21,000, and on the Great Northern, 21,160. In the United States we have the following from representative roads: The Boston & Albany, 18,500—these weights are all per driver—the Chicago & North Western, 19,500; the Big Four, 20,750; the Lehigh Valley, 22,500; the Pennsylvania Road, Class L., 22,900; C., B. & Q., Class N, 23,000, and the Philadelphia & Reading (single driver), 24,000.

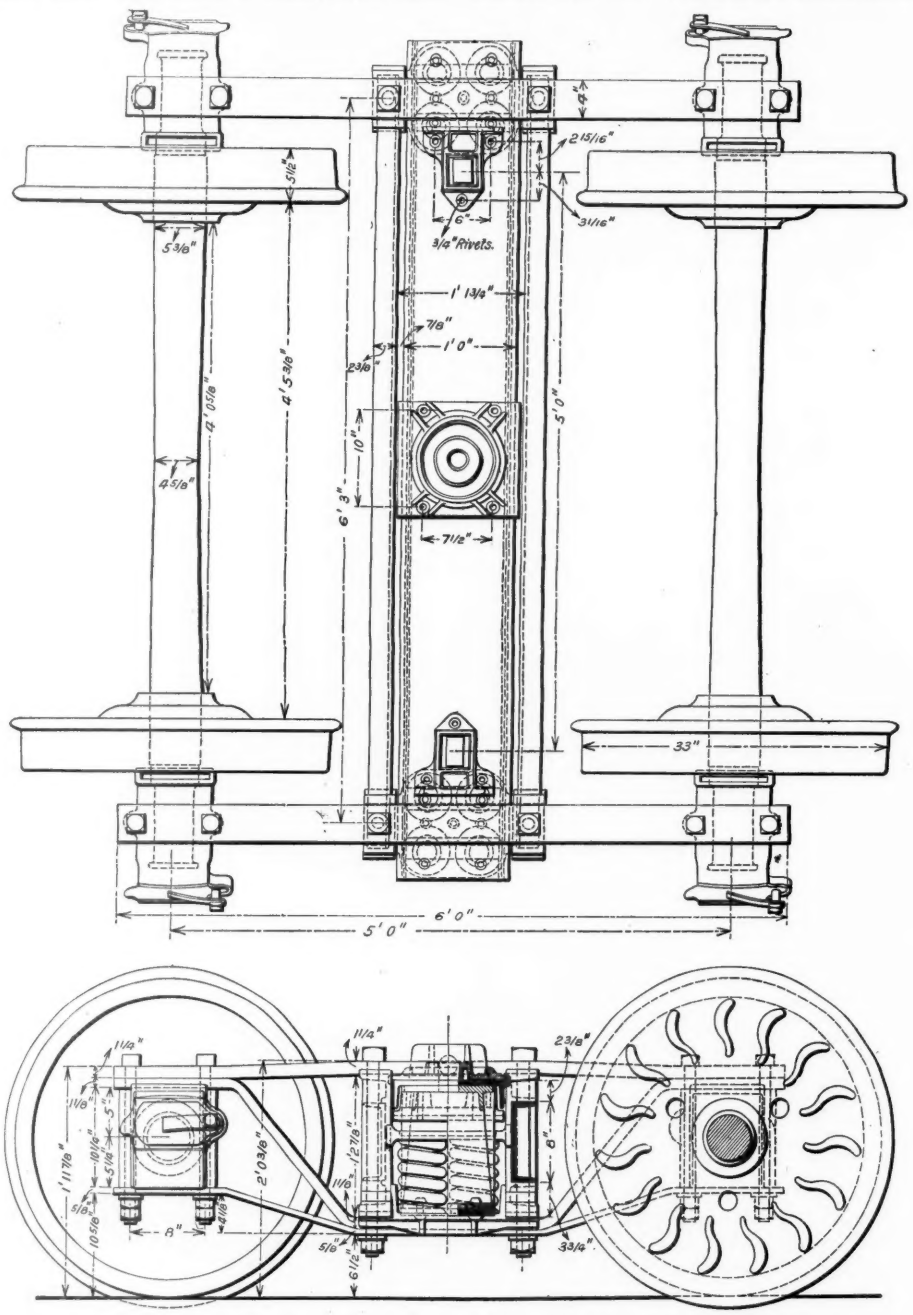
Now the question is whether we are all mistaken about this question, and the author is right in thinking that 12,000 lbs., or about that, is the proper weight on one driver. The bad effect, if any, of this increased weight on drivers would naturally show itself in increased wear in the tires, and we have in last week's railroad papers some very interesting data (see *Railroad Gazette*, March 13, 1896) about New York Central engines, having 20,000 and 22,000 lbs. weight per driver. Mr. Dudley, in this article, says: "Comparing weights upon drivers a few years ago with those in present use shows an increase in weight of load of 65 per cent. Yet by increasing the width of the head of the rail and a higher standard of track maintained, *the rate of wear of tires for the heavier locomotives has not been increased but on the contrary decreased.* In 1883 on the 65-lb. rail, narrow type, drivers carrying 13,360 lbs., the tires made an average of 119,400 miles per loss of 16th inch in thickness." Then he gives the average wear of 43 of these large engines having 20,000 and 22,000 lbs. per driver, and that is 23,000 miles for loss of one-sixteenth in weight; and 23 of these engines, which ran over 100-lb. rails, showed an average mileage of 29,000 miles per 16th loss in thickness of tire. . . .

The practical result of introducing the broad, stiff rail shows a decrease in wear of tires, frogs, rails and ties, and less expense of maintenance. In conclusion he says that this large rail marks an epoch in railroad progress; and that while the advantages have exceeded expectations, there are still greater values to be obtained by the use of the broader and stiffer 100-lb. rail.

So much for the locomotives, and in regard to the larger cars I think that the best thing I can do is to refer to the report of the New York Railroad Club's committee on the question of large cars (see *Railroad Gazette*, March 16, 1896), which most of you have probably read, but it applies to this subject directly. The committee shows that the increase in size of cars in this country has been about as follows in weight: In 1876 the capacity was 20,000 lbs., and the relation of the weight of the car to this capacity was 53 per cent.; in 1882 the 40,000-lb. capacity cars came in and the ratio was 37 per cent.; in 1889 60,000-lb. cars were introduced, that showed 31 per cent., and for 1896 they give the maximum capacity of cars as 80,000 lbs., where the same ratio is 31 per cent. The committee say in the body of their report "that operating economy demands that the number of tons of paying freight drawn by the engine shall be increased." This is a strong point in favor of the use of larger cars. The tendency in the future will be in the direction of increased capacity, concentrating the tonnage in fewer cars and shorter trains, and such an evolution will accomplish the following desirable results, viz.: (1) Reduce the friction and atmospheric resistance. (2) Bring the moving load nearer to the engine, so that it can be more easily handled than the long train. (3) Reduce the empty-car movement in the direction contrary to the heavy-traffic stream. (4) Reduce the number of cars and number of locomotives for moving a given tonnage. (5) Reduce the switching service. (6) Reduce the payments for car mileage and the cost of inspection and repairs in proportion to the tonnage moved. (7) Increase the traffic capacity of main lines, of freight yards and terminals without building more main tracks and sidings. . . .

It seems to me that Mr. Barr in his opposition to these improvements stands almost entirely alone, and that *he* is really the lost sheep which needs the attention of the shepherd, and that those who have adopted the heavy rail and the powerful locomotives and large cars are the ninety and nine which are safely within the fold.

MR. G. W. RHODES (C., B. & Q.): What I gather from this paper generally is that the author has seen in the last three or four years every possible effort in each department made to get down to bottom results. Having reached this most enviable condition, the question naturally arises, what more can we do, and how? One way is to rob your neighbor, or to rob your neighboring department, but the author very properly says that this is not the way to handle railroad business. The question then is, what is the proper way to handle our business when we have reached this condition? It is a most important question, and is deserv-



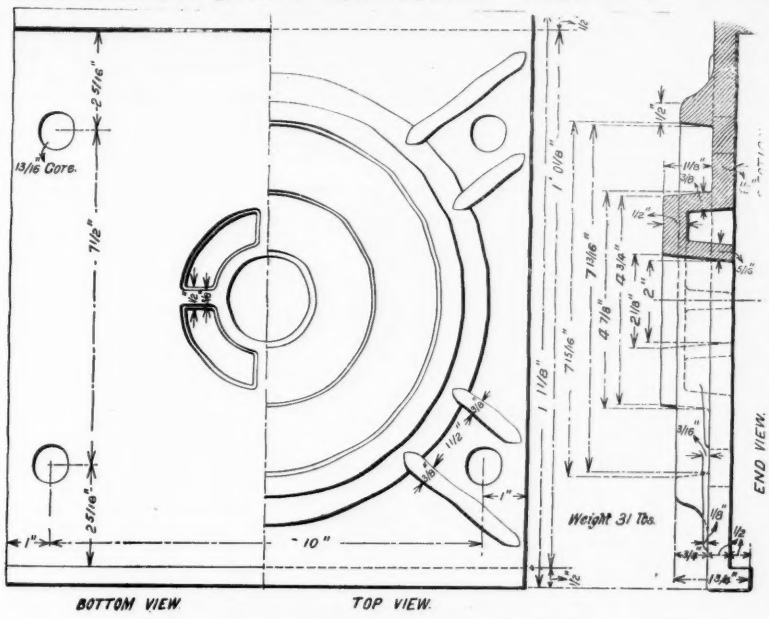
60,000-lb. Freight Car Truck, Barber Type—Chicago, Milwaukee & St. Paul Railway.

ing of a great deal more attention than it now receives. I believe the solution is co-operation; in other words, let it be made an incentive to the different departments of a railroad to work together much more in touch than they now do.

MR. J. N. BARR (C., M. & St. P.): I do think that the importance of consultation between the different departments is one of the greatest that should engage the attention of railroad men to-day. On every railroad we have got departments, connected with which are men that we absolutely do not know at all. They are working ahead in their own way; they are working possibly right in their own way, but how far their ideas of what is right for their especial department is right for the railroad as a whole is a great question, and there is no remedy for it except to get together.

I do not intend to lay any particular stress on the data that was presented as illustrations of the idea embodied in this paper. They were illustrations, and they may be correct and they may not be correct. I do not want, however, Mr. Forsyth's criticism to stand without a word, and that is, that the writer considers 12,000 lbs. the proper weight to a driver. I think the paper distinctly says that as a general rule a happy medium between extremes is best, and with an ordinary interpretation of a happy medium, where the extremes are given as 12,000 and 20,000, it would hardly be 12,000; and I do not propose to-day to put myself on record by saying just what is the right weight.

Mr. Forsyth also brought up figures showing that if we had a 60,000-lb. car, and if we loaded that to its maximum capacity, we are going to do more economical work than with a 20,000-lb car. I agree with him, but there are too many "ifs" there. Now, we do not haul 60,000-lbs. in our 60,000 lb. cars, and we do not haul 40,000 lbs. in our 40,000-lb. cars, and we do not haul half that; and there comes in the grave question as to whether 60,000-lb. cars are really economical. Sometimes we get a 60,000-lb. load in, but when we average up and figure, for instance, in the wheat country, that we have got many and many thousand carloads of 60,000 lbs., and then figure up our general average and find that in our loaded cars the loads will average about 10,000 lbs., it is somewhat discouraging to the advocates of the large capacity cars—I should think it would be at least.



Malleable Iron Center Plate for Barber Truck

History of Electric Locking of Railroad Signals.*

It is confidently assumed that the track circuit is familiar to all. The history of its invention by Mr. Robinson in 1872, and of its application to signaling on railroads for the past 20 years, is interesting, and has been extensively written upon. Its application in connection with electrical locking of the levers of an interlocking machine, has not become equally familiar.

The first interlocking machine erected in this country was imported from Saxby & Farmer, England, and put in operation on the Pennsylvania near Newark, N. J., in 1874. This machine is now in the Columbian museum, Chicago. It is the type from which most of the interlocking machines in use have been copied. Interlocking is for the purpose of regulating the order in which levers shall be operated in order to set the switches for a route, lock them and clear the signals for the passage of a train, so that clear signals by all opposite or conflicting routes shall be prevented. Detector bars prevent the throwing of locks and switches under moving trains, and levermen are depended on to use proper care in the manipulations. Where speeds are high, however, a like amount of dependence on levermen cannot safely be placed, and practice has shown it to be absolutely necessary to prevent careless changes in routes once given. The probable meeting of trains at a junction or a crossing, or running into an open drawbridge, provided with interlocking apparatus carefully handled is remote. The possibility exists, however, since there is no physical check on levermen to prevent them from clearing the route and, during the passage of the train, and before it has arrived on the switches, reverse these and clear the route for a conflicting movement, causing a derailment or a collision. The distant signal at "clear," under these conditions, becomes a very dangerous thing, as it invites high speeds and increases the disastrous effects of a derailment or collision.

These dangers were early recognized. The Jackson Switch & Signal Company, of Harrisburg, Pa., secured the Saxby & Farmer and Toucey & Buchanan patents for interlocking machines, and erected several plants in 1879-80; the repeated accidents caused by levermen reversing routes before trains had cleared the interlocked region, set them to thinking, and Mr. Jackson devised a scheme for attaching an electro magnet to operate a latch arranged to lock the signal levers in their clear positions by means of the train in the section. In 1872 Wm. Robinson invented and patented the rail circuit, and in company with Oscar Gassett, Israel Fisher, and others, developed a system of block signaling, employing this as the means for operating signals, locks on switchstands, highway crossing gates, alarm bells and annunciators. It took several years to demonstrate the practicability of the system, and many devices were experimented with. These men labored against great odds and spent much money and thought developing the first steps in an art which we, to-day, may learn in a few minutes. They devised and patented a lot of circuits, instruments, etc., for signals, locks on switch stands, draw bridges, gates, etc., anticipating by several years what has only recently been considered seriously as being necessary. The same ground has been gone over by others, in recent years, in most instances without a knowledge of what had already been done.

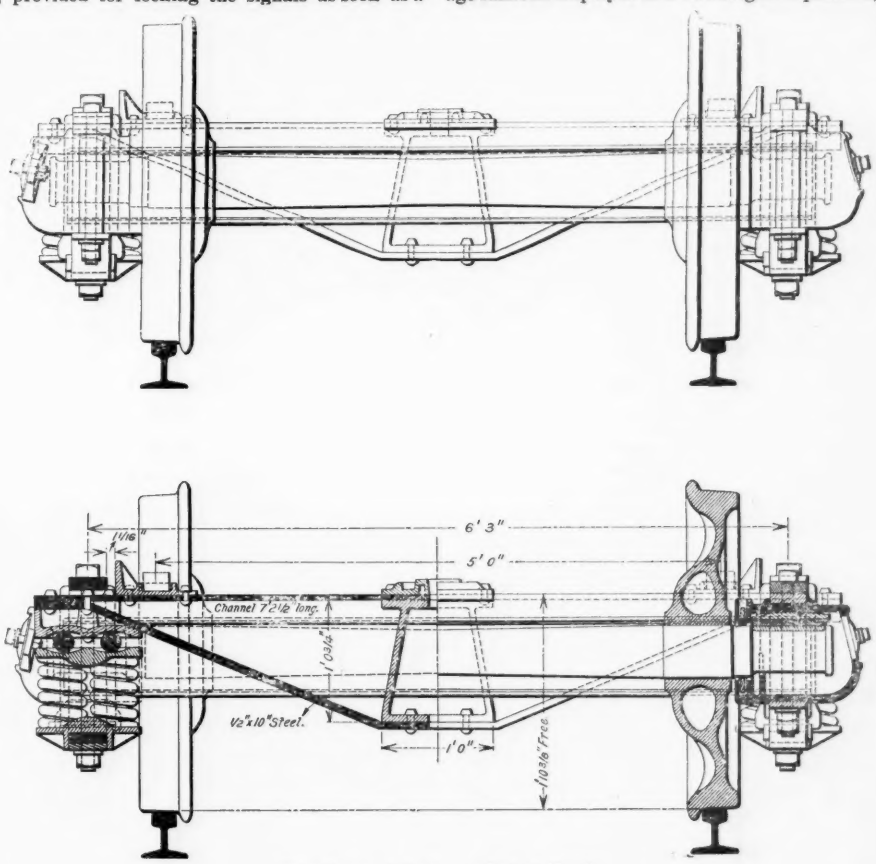
The earliest applications of the track circuit were made on the Fitchburg Railroad in Boston and its use in electrically locking switchstands and drawbridge mechanism practically was first made on this and the Boston & Maine roads in 1878-79. Gassett equipped a number of switch stands with electric locks in the block signaled region, at Waltham, Mass., on the Fitchburg road. These were applied to the stands and so arranged, by using a secondary circuit, operated by the track relay, as to lock the stand against being opened to throw the switch while a train was approaching in the block. Provision was made for unlocking the stand when it was necessary to operate into and out of the siding. The act of moving the switch from the line, opened the circuit by means of a shunt actuated by the points of the switch, causing the signal to show danger. Similar devices were applied on the Old Colony, Boston & Maine and Eastern Railroads, and on drawbridges as well. It may be of interest here to state that the overlap system was introduced at this time on the B. & M. block signaling between Salem and Beverly.

In 1878 the Union Electric Signal Company was organized in Boston with Gassett as Superintendent and Electrician, and the devices he and others had invented as stock in trade. Jackson in his search for a means for electrically locking levers, came in contact with Gassett and soon after a consolidation of interests was brought about. Gassett had devised a scheme for locking the levers of an inter-locking machine, by means of electric latches operated both by the track instruments and track circuit. Jackson's device for the same purpose anticipated the use of the track circuit. One of Gassett's devices, provided for locking the signals as soon as a train had entered under a clear distant signal. By means of a track instrument or "treadle" located near the distant signal, the wheels of the engine caused the circuit on the electric locking latch on the signal lever to open. The armature dropped and was held and prevented from releasing by a second electric latch, which would release when the train had passed over and out of the inter-locked region, striking a second track instrument provided for the purpose. These ideas were identical in their purpose, which was to secure the route once given for the passage of a train over a certain point by electrically locking the signal levers in their positions for such passage and releasing them after it had been made. Later on Jackson took out a patent which was to lock the levers of opposing routes in their danger positions, instead of those of the route desired in their safety positions. The circuit from each section of track was carried direct to the magnets of the electric latches and did not provide for the use of a relay. We know now that this is not practical. Experience has demontrated the impracticability of operating high resistance magnets and the necessary batteries directly through the tracks as part of the circuit, and, considering the fact that the ordinary interlocking accomplishes exactly what this scheme was designed to cover, the only feature of interest in the device, seems to be that it involved the electric locking of levers.

The electric locking of levers of manual, hydraulic and pneumatic interlocking machines was put into practical operation at various places during the years 1882-3-4-5 by the Union Switch & Signal Co., employing the track circuit for the purpose. The first application was made to the Saxby & Farmer machine in 1882 on the Pennsylvania Railroad, and provided for locking signal levers at safety by the train entering under the distant signal. It soon became evident that this was not the proper principle, as it prevented the signals from being restored to danger until the train had passed beyond the interlocked point. This was changed, and an arrangement made for locking the lock levers of switches, thus allowing the signal levers to be restored to the normal position as soon as the train had passed the signals, while at the same time it secured the lock levers until the train had gone beyond the limits of the interlocking. The expense of bond wiring and insulating the rails for such long distances led to a change in these arrangements, and the locking was made to take place on pulling the distant signals to clear. A circuit breaker operated by the blade itself opened the circuit of the electric latches on the lock levers by means of an interlocking relay in the tower. The signal could be restored to the danger position, but the train movement over the plant was necessary before the latch could be released.

In another arrangement circuit breakers are operated by the levers in the tower instead of on the distant signals. Theoretically, this was good, but in practice it involved much trouble. Levermen, are required to try their levers from time to time, during bad weather, to see if they are in working order, and the signal lamps lighted. This, of course, resulted in locking up the machines electrically, and the attachment became a positive nuisance. Cases were reported where trains had fouled at crossings where the electric locking should have prevented such occurrences, and inspectors discovered that the levermen had secretly rigged circuits so that the electric locks were cut out entirely. This led to the introduction of "release buttons," which allowed the operators to try their signals and then release the electric latches. The convenient proximity of the buttons detracted from the usefulness of the electric locking as levermen could release the locks at any time and through carelessness or design cause serious harm by reversing a route after giving it to a train. The releasing buttons were then put down stairs, remote from the operating floor, but the crafty leverman soon found means for short-circuiting at a convenient point and several instances were discovered where "jump wires" had been put in and cleverly concealed leading to some convenient point on the operating floor. This threw all these precautions quite out of countenance. Expensive and complicated "time movements" and various apparatus for checking the levermen and recording the times that they manipulated the electric locking were devised and put in service, which only resulted in complicating matters.

In those days interlocking was looked on by the average railroad employee as a downright imposition, and it was practically impossible to have proper attention given to the tracks to maintain them in order so that insulations, bond wires, etc., could be kept in proper form to insure keeping the track circuit in working order. Great trouble resulted with the electric locking, as, by failure of the track circuit, the locks would drop and the apparatus be locked up indefinitely, or until they were broken into and released by "plugging." The maintenance of batteries was put in the hands of telegraph repairmen and received insufficient attention. . . . The electric locking of levers has always been a feature of electro-pneumatic interlocking where it has been put to a more extended use, being made to do the service of detector bars. The levers for operating switches and their locks are thus secured during the passage or presence of trains on the track of the route cleared. This arrangement is known as the "electric



Elevation and Sections, Barber Truck.

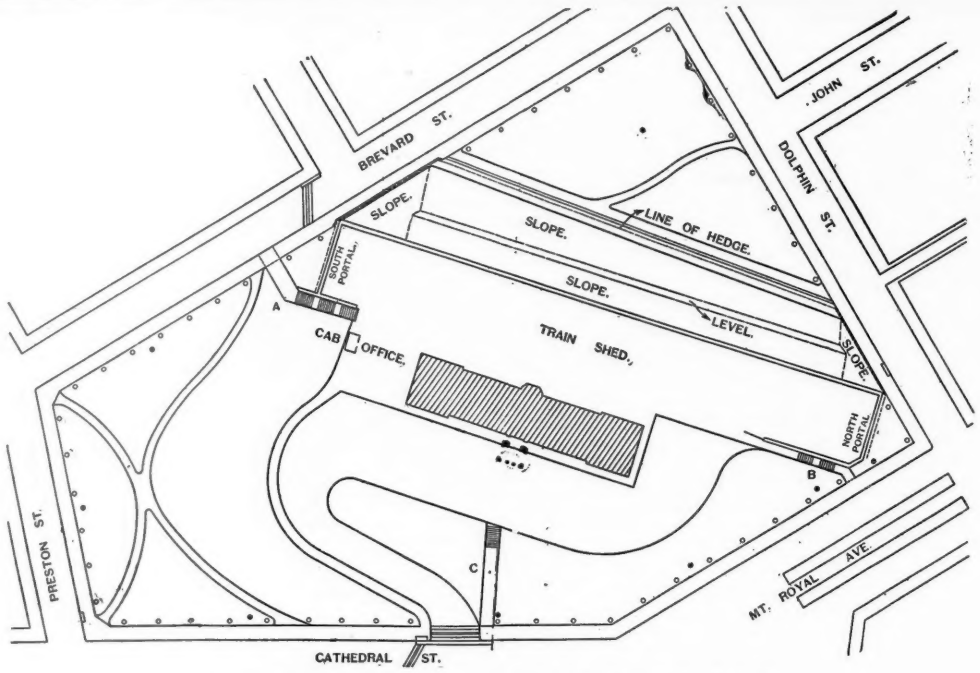
*A paper read before the Railway Signaling Club, Chicago, by Mr. V. Spicer, May 1896.

detector bar," and has been in service at several plants for years, but the expense of maintaining the insulated sections acted against this scheme in most cases, and mechanical detector bars were applied as being cheaper to maintain.

The safe and practical use of manual block signaling is attained only by the electric locking of levers in the danger position by means of the track circuit. Supplemented by the electric slot on the signal, which is itself governed by track circuit, the manually operated block signal is practically a perfect system for the safe spacing and blocking of trains, under absolute blocking rules. Such a system has been in service on a number of Eastern lines for many years.

Up to November, 1885, there were 3,165 working levers in use in 227 plants divided among thirty-five different railroads in this country. Seventy of these plants had electrically locked levers. Since then, aside from the pneumatic plants installed, there have been few instances (not over a dozen) where electric locking of levers was applied. There is no doubt that the lack of proper care in the maintenance of the electric apparatus and the consequent failures in the locking was the direct cause of its general abandonment. We were then many years in advance of the times, and it is only now, since the signal engineer has been recognized, and railroad managers are realizing the importance of his department, that intelligent maintenance of the interlocking and signaling plants and strict discipline of levermen have made it practically possible to lock electrically.

To conclude, it will be seen that electric locking was actually applied in practical form before the introduction in this country of the interlocking machines, that it became a feature of the earliest installations of these machines and continued so, under more or less adverse circumstances, for a number of years, falling generally into disfavor for evident reasons, until at last conditions have arisen that make it desirable and practical to resume its use, thus placing interlocking on the highest plane of efficiency and insuring more effectively the safety of railroad transportation.



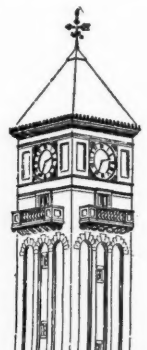
General Plan of Station Site—Mount Royal Station of the B. & O.

The New Baltimore & Ohio Station in Baltimore.

The present terminus of the Baltimore & Ohio Railroad, in Baltimore, is Camden Station, on Camden street, between Eutaw and Howard streets. This is an old structure, and neither its location, nor its fittings are such as to make it attractive. When the plan for the recently completed Belt Line tunnel was outlined, a new station, situated in the residence part of the city, formed a part of the scheme. The tunnel is directly under a densely populated part of the city, extending from its southern terminus at Camden Station to Brevard street, where a break in its line occurs of about 575 ft., this section lying in a deep open cut with sloping grassy sides. It is along the eastern side of this cut that the new station is placed. The land surrounding its site is called the Bolton lot, and lies in the residence section of the city, being bounded by Cathedral street, Preston street, Brevard street, Dolphin street and Mt. Royal avenue. The latter street has given its name to the new station, and hereafter it will be called the Mt. Royal Station of the Baltimore & Ohio.

The station, which is now nearly completed, is built with its ground floor on a level with the tracks. This places it at a considerable distance below the street level, the roof of the main part of the building being, in fact, not a great distance above it. Access to the station will be afforded by three covered footways, with steps descending to the track level, and by a sloping, inclined driveway, as shown in the plan of the grounds. The slopes of the excavation for the station, and the unused parts of the lot, will be laid out as a park, with flowerbeds, shrubbery, etc.

Work on the station was begun about six months ago. The architects are Messrs. Baldwin & Pennington, of Baltimore, and the contractors J. J. Walsh & Son, of that city. The present condition of the structure is shown in the engraving from a recent photograph. This view shows the station from the train-shed side, the shed, however, not being yet in position. The appearance of the structure as seen from the front, or Cathedral street side, is shown by the perspective view. This view also shows two of the covered stairways for foot passengers, these two leading to Brevard street and to Mt. Royal avenue. A third stairway, shown at *C* in the plan of the station grounds, will give an entrance from Cathedral street. At *C* is also shown the beginning of the sloping driveway. None of the street car lines reach the streets directly surrounding the station, but connection will probably be made later, so as to land passengers in front of the main entrance.



The building is of Port Deposit granite, with trimmings of Indiana limestone and measures 250 × 53 ft. It has two wings and a central tower, the latter being 150 ft. high, with clock dials near the top. The building is roofed with red, glazed tiles, and presents an attractive appearance. In addition to this main building, there will be a glass roofed train-shed, 400 ft. long, over the four tracks in the cut. (Shown uncovered in the photograph.) There is also to be a roofed platform entirely surrounding the building, and a 30-ft. platform connecting the main building and the train-shed.

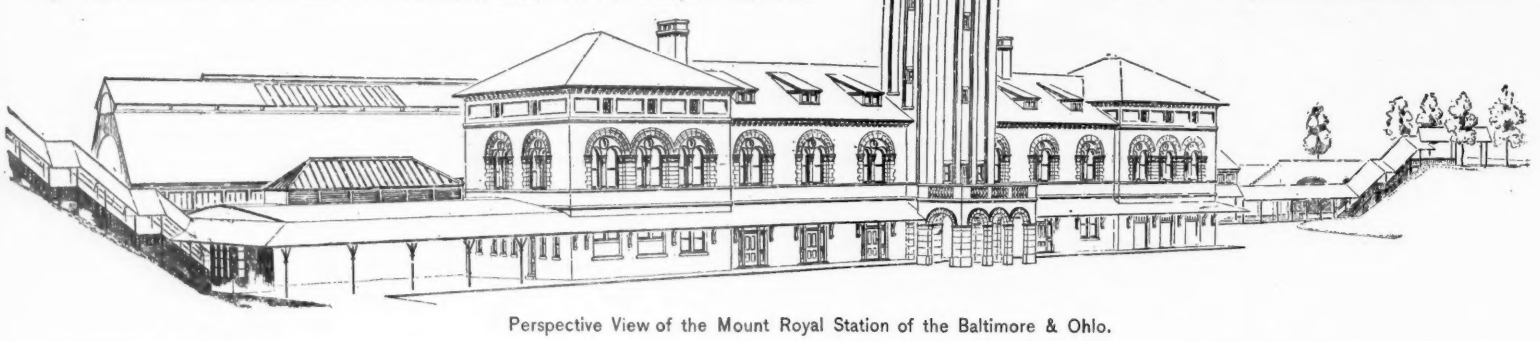
The central portion of the main building is but one story in height, to provide for especially high ceilings in the waiting rooms. Galleries along the east and west walls connect the two upper floors in the ends of the building. There are two waiting rooms in the building, one a general waiting room, 66 ft. 9 in. × 42 ft., at the south end of the central part of the building, and the other, a ladies' waiting room, in the north end, 44 ft. 3 in. × 42 ft. A wide hall connects these two rooms, on one side of which is the ticket office, with windows opening into each waiting room. On the other side is the news stand. Directly in front of the building is the *porte cochère*, covering the driveway. A men's smoking room opens into the main waiting room from the south, and ladies' toilet room into the ladies' waiting room from the north. At the extreme north end of the building is a large baggage room, with an office for the Station Master. At the extreme south of the building is the restaurant. On the second floor of the south end are the kitchen, servants' quarters and store room. On the second floor at the north end are the Train Dispatcher's office and the quarters for the station officials.

The interior of the station will be fitted up in white oak, finished in cabinet style. The ceilings will be paneled in stamped metal, and the walls will have a heavy wainscoting, 7 ft. high.

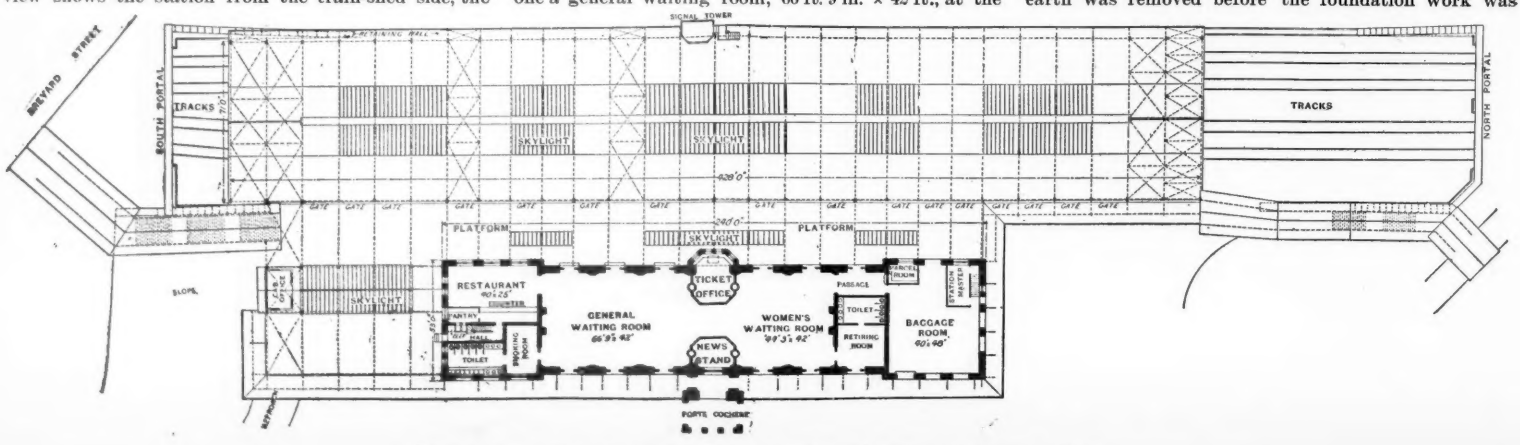
The tower will be one of the most striking features of the structure; being of early renaissance design, with tiled roof, and a large clock dial on each of its four sides. Entrance to it will be had by means of the east gallery. The clock dials will be illuminated by electricity, and an electric inscription, Baltimore & Ohio Railroad, will also be placed on the tower.

A feature of the internal arrangements of the building, will be the use of electricity for heating, as well as lighting, the rooms.

One of the most expensive features, in the construction of this station, was the necessity for excavating the site down to the level of the tunnel tracks. It was thought better to do this than to place the main floor of the building on the street level, and use elevators for passengers and baggage. In all, about 90,000 cu. yds. of earth was removed before the foundation work was



Perspective View of the Mount Royal Station of the Baltimore & Ohio.



Floor Plan of Station and Train Shed—Mount Royal Station, Baltimore & Ohio

begun, this work delaying the completion of the structure considerably.

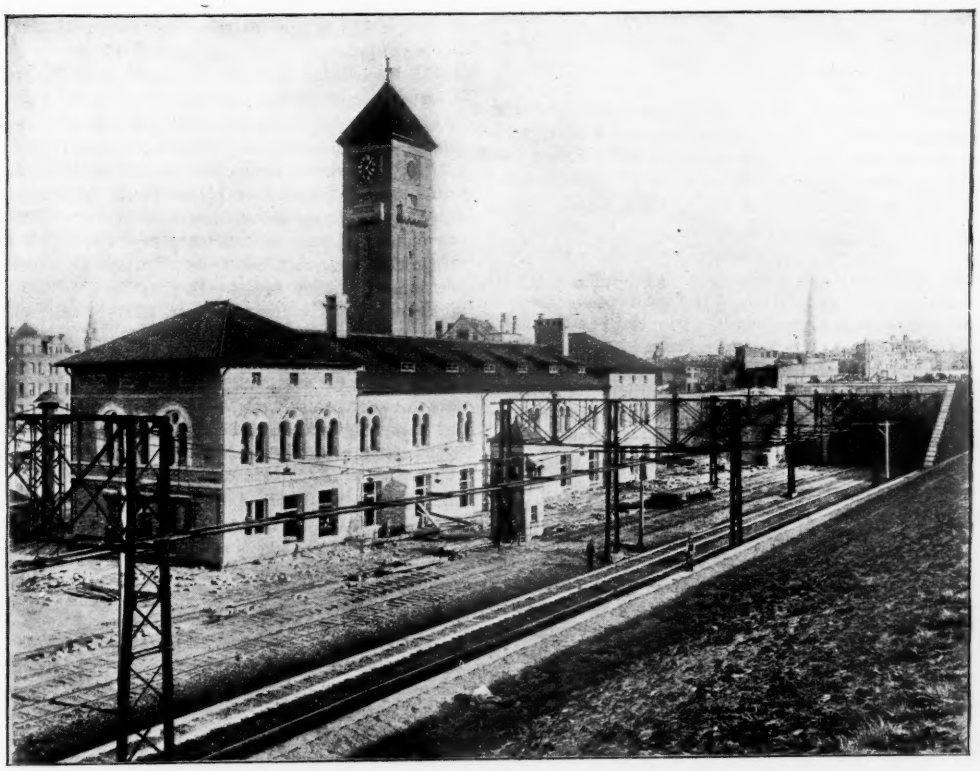
The B. & O. has not as yet decided on a definite schedule for the arrival or departure of trains from this station, but all trains on the Philadelphia Division, including those of the Royal Blue line, must pass through it, and it is anticipated that it will be the future main passenger station of the line. Camden station will still be used, but the new station will be much more accessible to the main residence portion of the city.

The cost of the Bolton lot, to the Baltimore & Ohio, was $130,936, the provisions being made that no freight entrances be made on either Mt. Royal avenue, or Dolphin street, and that the expense of parking and maintaining the unused part of the property be borne by the railroad company.

The contract for the train shed was recently let, and it is probable that the entire structure will be completed and ready for use in a few weeks.

Railroad Matters in England.

Railway Accident Returns.—The Board of Trade return of railroad accidents for the year 1895 [noticed in the *Railroad Gazette*, May 1, page 308] contains a good deal of information. Figures notoriously can be made to prove everything, but it is worthy of note that it was through non-railway accidents that no less than 66 persons were killed and 5,297—a good deal more than half the total—injured. It would indeed seem as though railway servants in particular were safer in a train than anywhere else, for, while only 12 servants were killed and 88 injured by train accidents of every kind, 10 were killed and 1,395 injured in loading and unloading vehicles and 11 killed and 447 injured by falling off platforms, ladders, etc. Of the 188 axle failures (not train accidents) 111 were engine axles, and of these 87 driving axles: of the 87 driving axles 35 were of iron and had run on the average 222,259 miles; 49 were of steel, having run on the average, 253,161 miles.



Present Condition of the Mount Royal Station of the B. & O.—Showing a Tunnel Portal and Overhead Electric Construction.

Punctuality.—A return lately issued by the Board of Trade deals with the punctuality during June, July and August of last year of all the trains entering London from the country south of the Thames after a journey of not less than fifty miles. Five companies are concerned, the Great Western and South Western among long distance lines and the South Eastern, the Chatham and the Brighton Railways, which between them serve the south east corner of England. It cannot be said that the return is over creditable to our English railways. Of trains to time or not more than five minutes late the Brighton and the Chatham had a percentage reaching as high as 58 in June and the South Western as high as 50 in July, while no company had in June or July as much as 8 per cent. of its trains over half an hour late. But even in June only 27 per cent. of the Great Western trains were punctual. When August came with its flood of holiday traffic punctuality seems unfortunately to have disappeared almost entirely. On the Brighton Railway for instance 18 per cent. only of the trains were to time, and 16 per cent. were over half an hour late.

The truth is that pleasure traffic in summer is increasing so rapidly that the existing organization of our railways is not capable of coping with it. Figures are not available, but I should estimate that, for one long distance passenger in February, there are at least four in August, while the mileage of through trains is hardly increased more than 10 per cent. The result is that trains are overcrowded and delayed, sometimes by extra vehicles being attached, at others by being run in two or three parts, or, again, by being too long for the platforms, and so having to draw up at each station twice.

Then again passengers exercise to the full extent their right of arriving at the last moment in cabs, piled up with mountains of luggage. Legally a passenger is entitled to 120 lbs. first class, or 60 lbs. third, but traditionally he is privileged to take at least twice this amount without charge made or question asked, and very rarely is any attempt made to dispute his prescriptive right. Once more, each passenger may be, and often is, accompanied by a troop of friends, who crowd round the carriage door and obstruct movement both of passengers and railway servants on the platform not a little. The idea of enforcing here any drastic measure such as the Prussian "Bahnsteigsperre" is out of the question. I have sometimes seen in German railway papers the Prussian system described as English. So perhaps it is worth while saying that, though for purely local traffic in great towns passengers only are supposed to be admitted to the platform, no such limitation is ever applied to main-line platforms, except in the case of one or two termini of minor railways in London. Even where any such restriction is nominally in force it is constantly ignored or waived in practice. I have myself, for instance, day after day and for months at a time passed onto and off the platforms of the Underground Railway in London, which are supposed to be exceptionally rigidly guarded, not only without showing my season ticket, but even without so much as asserting that I had a ticket in my pocket. As for luggage the companies here for some time past endeavored to introduce a system of collection in London and delivery in advance at destination. An ingenious scheme with this object has just been put forth by the South Eastern Company. At an early date, and after it has been tried in actual working, I shall hope to describe it. But hitherto, it must be confessed, no scheme, however plausible, has had much effect in inducing passengers to separate themselves from their luggage.

Railway Competition.—In the admirable series of articles dealing with the relation between the French railways and the French budget lately published by Monsieur Colson in the *Revue des deux Mondes* and reprinted in the Bulletin of the International Railway Congress there is this passage:

"The question of competition between railways is nowadays settled. Every competent judge recognizes that of all the steps which can be taken to secure to the public a good and cheap service competition is at once the most burdensome and the least efficacious. The competition which formerly existed between our great railway systems has been brought to an end by mutual agreement. It is inconceivable that the railway managers will ever be so foolish as to attempt to rekindle the strife, or the Government so weak as to permit it."

Monsieur Colson writes, if I may be allowed to say so, as Frenchmen not unfrequently do, as though France and the universe were synonymous terms. His statement would not, I think, be accepted as accurate in America; certainly it would not be so accepted here, and after all England and America have had more practical experience of railway competition than France. There are, of course, Englishmen well qualified to judge, who regard competition as an almost unmixed evil. But the accepted theory here is, I think, that competition on the whole is distinctly in the public interest. Of course, we recognize that competition must be kept within bounds. There must be, for instance, an authority to prevent the inordinate multiplication of new railways. Moreover, the existing companies must learn not to push competition too far, more especially in the direction of rate cutting. But given these conditions—and the English history of the last generation shows them not impossible of attainment—we believe that if the traffic between A and B has outgrown the existing accommodation, the new accommodation necessary will be provided by a new company, taking a new and independent route, better than by an enlargement of the facilities of the original company. We believe that in this manner capital is not wasted, while the stimulus of competition secures to the public a better and certainly not dearer service.

An instance of this may, perhaps, be quoted, which has been much discussed in the House of Commons within the last few days. Holyhead is 264½ miles from London on the road to Dublin, of whose traffic the London & North Western has a monopoly. Carlisle is 299 miles from London on the road to Scotland, for whose traffic the North Western has to fight hard against two energetic rivals. It is within the mark to say that the Holyhead traffic is as valuable to the North Western as the traffic passing by Carlisle. Yet to Holyhead there are only four trains a day, two of them not carrying third class passengers at all. The fastest takes six hours and five minutes, the fastest third class six hours and a half, just 40 miles an hour. To Carlisle there are nine trains, all third class. The fastest takes 5 hours 50 minutes, over 50 miles an hour. The fares by both routes are on the same scale, but, while any old carriages are thought good enough for the Irish traffic, the best and newest rolling stock is always found on the trains to Scotland. The only reason for the difference patent to the English observer is that the Scotch traffic is competitive, the Irish non-competitive. Nor can we see any evidence justifying a belief that the North Western has lost by encouraging the Scotch traffic, or gained by its severe economies in reference to the traffic to Ireland.

The London and Paris Traffic.—Apropos of competition I find in the *Journal des Transports* a recent article on the traffic between France and England, which commences with Robert Stephenson's well-known phrase, "Where combination is possible competition is impossible." The moral of the tale is that once upon a time the *Nord* and the *Ouest* competed for traffic between London and Paris, but that after a time they agreed to divide the receipts in fixed proportions, and that the old agreement on this subject having expired they have concluded a new one to the same effect. Unfortunately the *Journal des Transports*' facts do not seem altogether to suit its text. For, spite of combination and pooling of receipts, the Western Company has gone on competing with the Northern all the time, and by faster trains, better boats and harbor improvements at Dieppe and Newhaven it has so improved its service, and consequently attracted so many more passengers, that whereas in the decade just closed it only received 22 per cent. of the gross passenger receipts by both routes, it has now made good a claim to receive no less than 30 per cent. Further, the French companies only reach London by the help of their respective English allies, and these latter, though they might combine and pool their receipts to-morrow, if they chose to do so, still retain their independence of one another, and each company competes with its neighbor for the entire English portion of the fare of every passenger whom it can attract to its route. On the whole it would seem as though Robert Stephenson's famous aphorism had been, in American phrase, a little too previous.

LONDON, May 1, 1896. W. M. ACWORTH.

Compressed Air Motors for Street Railroads.

An experiment of great interest is to be tried in Washington very soon. It is proposed to adopt compressed air as the motive power on the lines of the Eckington system in that city, leaving the streets clear of all stationary appliances, except the tracks; and the experiment will be of sufficient magnitude to test the commercial, as well as the mechanical, utility of compressed air motor for this work. The people of the District strenuously object to the defacement of their beautiful streets by trolley poles and overhead wires, and street railroad companies have been compelled to seek less objectionable means for the propulsion of their cars. The cable and the underground trolley systems are already working there.

An agreement has been entered into (we are informed from Baltimore that a contract has been signed) between the officers of the Eckington Street Railroad system, in Washington, and Messrs. H. K. Porter & Company, of Pittsburgh, whereby the latter is to provide 10 motor cars to be operated by compressed air. In form they will resemble the ordinary "grip car" of the cable railroads, having a place for the motorman and seats for passengers. Other cars can be coupled on as trailers and trains made of any necessary length.

According to the present plans power is to be supplied to the engine from a tank carried in front on a low truck, coupled on at the power-house and replaced after each round trip. The tanks are charged at the power-house, each containing enough air to work the engine during a round trip over the route. Air-brakes will also be used.

The Eckington Street Railroad Company has in view the equipment of the Washington lines with these motors. They will not be used, however, on the main line of the Columbia & Maryland Railway, between Washington and Baltimore, arrangements already having been completed to operate that line by the overhead trolley.

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EDITORIAL ANNOUNCEMENTS.

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies in their management, particulars as to the business of the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and railroads, and suggestions as to its improvement. Discussions of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.*

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting, and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers, can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

The United States District Attorney in New York, Mr. Macfarlane, has presented what, from the layman's point of view, is a masterly argument, in the suit against the Joint Traffic Association, and we have summarized its main points in another column of this issue. We expect soon to have a copy of the argument of the defense. The decision in this case will very probably hinge on the way in which the judges look at a great mass of judicial precedents concerning the treatment of subtle differences between the letter and the spirit of a statute, and it is, therefore, not possible at this time, even if it were desirable, to forecast the result; but it will not be out of place to briefly examine the Government's argument. Mr. Macfarlane's strongest point is that anything which may have as good an effect as a pool, in moderating competition, is the same as a pool, and therefore illegal. He holds, in effect, that a differential rate made in June, to help a road which lost business in April, would be contrary to the fifth section of the law. Pending the presentation, in the defendants' brief, of a lot of decisions to neutralize those used to support this view, it may be remarked that in all probability differentials could be made without any association whatever. The anthracite coal producers seem to agree pretty well lately, without an organization. When the law assumes to say that A shall not refrain from stabbing B, when B reduces rates, it undertakes a difficult task. For A and B to speak to one another on the street, on the subject of rates, may be a violation of the anti-trust law, but it cannot be that such a law is in accordance with sound public policy, or that it can permanently stand.

We have called Mr. Macfarlane's brief a masterly argument, because it shows wide and thorough research, and puts his case in the best possible light, without extravagant or disingenuous claims; but all his numerous arguments are tainted with the weakness—in our opinion a fatal weakness—that they depend upon the sum of experience, with pools and rate regulations, as gathered from the books. Judge Cooley, Professor Hadley, Mr. Fink, and the other authorities quoted, enunciated correct theories and gave a true picture of the conditions as they existed in 1883-7; but the four months since the Joint Traffic Association began operations have made more history than four years made before. The experience of 1896 shows that the greater part—and possibly the whole—of the troubles of former years with rates, pools and all manner of negotiations between competitors, was due largely to unwillingness to act; not to the supposed impossibility, implied in the statements then made. According to all experience, says Mr. Macfarlane, we must assume that the roads now intend to pool freight, because they cannot carry out their purposes in any other way. But they have already, in the four months' delay which the District Attorney has allowed, proved that they can do what was formerly declared impossible. It is true that four months is not a long time, but the new plan deserves a thorough trial because it is so different from every plan tried before. For each road to change rates only through its board of directors, and for each to hold a conference with all its competitors every day, which is practically what is now done, is manifestly such a simple, direct and logical remedy for the former difficulties, that it strongly commends itself without trial. To the lack of these two things must be attributed a very great share of all the rate troubles which made Mr. Fink, Judge Cooley and others grow gray before their time. Theoretically all rate quarrels can be settled, without war, by the kind of discussion which has now become a regular thing; and while skeptics will not accept this theory without further proof, every day adds to the experience which constitutes proof.

We have heretofore emphasized the claim that the term "pooling," in the anti-pooling law should be construed strictly and narrowly. The Government Attorney in this case adduces a multitude of decisions to maintain the contrary view. It seems to us that a mere perusal of the law is sufficient to show that the person who drafted it meant to leave the matter at loose ends. The fact that differentials were employed to take the place of pools was as well-known then as now. Pooling of passengers was not prohibited, while pooling of passenger earnings was; was that intentional? It is just as wicked to pool passengers as freight. If it is right to pool passengers, where is the wrong in making differential rates for them? And wherein is a differential worse on freight than on passengers? In such a carelessly drawn law any one who suffers by it ought to have any advantage he can get by insisting upon a strict construction of its terms; and in the present matter the whole case of the opponents of the law is or should be fortified by two peculiar things in connection with pooling; one of these is that pooling is not in itself wrong, being legal in England, and the other is that pools in this country were only moderately successful—often unsuccessful, in fact. The new agreement now in operation bids fair to work better results, in some directions, than a pool would. The contention of the Government that the Joint Traffic roads are trying to "monopolize" interstate commerce in their territory suggests two reflections. If we assume that all the East and West trunk lines in the United States belong to the Association, or fully co-operate with it, it is fair to ask whether the public—the states—in granting charters did not intend that they should monopolize this commerce. Are not nine trunk lines enough? Did the states intend to go on forever encouraging the construction of new roads to compete for the business? Again, the charge of monopolizing must find trouble in the fact that the Grand Trunk of Canada is in the agreement. Some persons are complaining because the American roads do not monopolize enough; they want Canadian roads entirely shut out. If it be claimed that the seven northern roads and the Chesapeake & Ohio monopolize business to the detriment of the one outside road, the Norfolk & Western, the answer is that they don't. That road has secured a big share of the business since the new Association maintained rates.

The railroads west of Chicago have finally decided to make party rates of 2½ cents per mile per capita for parties of 10 to 19 and 2 cents a mile for parties of 20 or more for "all legitimately organized parties, such as theatrical, operatic or concert companies, glee clubs, brass or string bands, boat, baseball, polo, golf or tennis clubs, football teams, hunting or fishing parties, and other parties of like character, regularly organized for giving exhibitions, taking part in contests, or for some other joint purpose." These tickets will not be sold to brokers or to "parties organized only for the purpose of securing the party rate." The decision to issue these tickets under the above restrictions was reached only after protracted discussion and, as we understand, upon the advice of counsel that such action could not be construed as a discrimination, within the meaning of the Interstate Commerce law. It is contended that the restriction of these tickets to use by *regularly organized* parties of 10 or more is no more than a reasonable precaution to protect the roads against fraud, and that as long as the reduced rate is open to all such parties upon the presentation of proof of their legitimate organization, no action for discrimination within the meaning of the law can lie against the roads. It is of course idle to speculate as to what would be the ruling of the Commission if a complaint should be made, as the question is one in regard to which there appears to be considerable difference of opinion both among traffic men and lawyers; but it is hardly probable that any case will arise in which the roads will not be able to show that no discrimination was intended. Theoretically, ten individuals going to a wedding or a funeral; or to a circus, where no excursion rate had been made, would have a very plausible claim to the reduced rate, even though they had not been "organized" as a party more than five minutes; but in practice every road ought to know how to deal with such cases so as to forestall complaint. If the citizens in the Western country find themselves very badly defrauded by the regulations of the railroads, we advise them to form a party of ten to exterminate a few scalpers, and thus relieve the railroads of the necessity of maintaining such rigid rules.

The Joint Traffic Association.

During the months while the Joint Traffic Association was forming, its progress was watched with more than interest—with anxiety—by those who have any large and accurate notion of the real relations of the railroads to the Republic. Such persons understood that an association like the one proposed would embody ideas of railroad regulation that are in accordance with the spirit of our institutions and in harmony with the development of self-government by our race. It would embody the idea of regulation of the affairs of the railroad properties by the owners of the properties, on the basis of enlightened self-interest, which, in the end, is the common interest of the owners and of the public served by the railroads.

It was apparent to the observer of this effort to establish a working agreement among all the railroads covering the trunk line territory that the effort promised to provide a means by which the best part of the Interstate Commerce act could be enforced. It promised to provide a machine by which discrimination between persons or places could be prevented more effectually than any law has ever been able to prevent it. It promised stability and impartiality of rates, which in our present situation are of more importance than low rates. It promised to stop the reckless competition in rates, and to stop other forms of waste of income which are destroying the value of railroad properties, which are discrediting the management of railroads, and which are working harm to almost every interest in the country. It was apparent that the effort to establish this machine was made with great care and deliberation by many of the ablest men in the land. Knowing the apparent conflict of interests involved, and knowing the personal strength and the ambitions of many of the men concerned, we were not very sanguine that the working agreement could be made or that it could last long.

Finally the agreement was reached. It was signed Nov. 19, 1895, and it went into effect Jan. 1, 1896. The territory covered embraced all the states west of the Hudson, east of the Mississippi and north of the Ohio, including the Chesapeake & Ohio Railroad; the Norfolk & Western being the only important road left out. The essential features of the agreement were that each road should have a regular representative in a board of managers constantly in session, that dissent from the action of this board should be valid only when taken by the directors of the road, formally voting; that a two-thirds vote should always prevail, and that unsolvable questions should be promptly arbitrated by three men constantly at the managers' call.

The Association has now been working four months, and we are assured by men whom we have every reason to trust that the loyalty and the good faith of all of its members are beyond doubt, and that there is far more reason now to hope for the stability of the Association and for the extension of its influence than there was at the beginning. This, however, is in a degree subject to the result of the suit brought at the instance of the Interstate Commerce Commission, in the United States courts, to annul the Association, on the ground that it is a pooling contract and that it is an unreasonable restraint of commerce. But even if the suit is decided against the Association, its existence and its most useful work will probably not end now. The most valuable feature of the Association is in bringing together the responsible officers of the railroads for reasonable consultation. If the Joint Traffic agreement is decided to be illegal there is still no law to forbid consultation, and there is much reason to hope that the organization will be kept up even if the agreement has to be modified.

But it seems probable that the interests of the nation and of the railroads will be served by the maintenance of the Joint Traffic Association in the full force of its agreement. It is reasonable to suppose that the very great majority of railroad officers are law-abiding men, and that they are enlightened

beyond the average as to the true sources of prosperity of the properties which they administer and of the communities which they serve. In fact any other supposition is unreasonable. These railroad officers reach their positions by a severe process of natural selection and must be men of more than average ability. They are trained in large responsibilities. They deal with many and diverse interests covering large terri ories. Their experience is of a kind to strengthen the understanding and the judgment. If, then, many of them viclate the statutes of the states and the nations or the laws of good economics it must be under pretty heavy stress. In fact many officers of the traffie departments of the railroads are under such stress of circumstances that it is almost impossible to obey the laws or to preserve their self-respect. Naturally they, not being depraved men, but being on the contrary rather superior men, would be glad to see a set of conditions established which would relieve them from a situation so disagreeable and humiliating. But for the last nine years it has appeared impossible to establish such conditions.

To state the matter a little more specifically, most railroad officers whose duty it is to get traffic are men who would of choice use their wits in honorable and worthy competition with honorable and worthy men; but the laws have seemed to make it impossible to restrict competition by agreement; the laws have called for publicity of rates, and have forbidden discrimination in rates and in various other inducements. But the laws have also seemed to prevent combinations by which the railroad companies could hope to hold each other to any agreement as to rates or policy. As a result of all this the traffic officer has felt obliged to offer illegal inducements to customers. He has seen the business going to some other road; on him has fallen the responsibility of getting freight for his own road; his reputation as a man of ability, his income and his career depend upon his getting business, and it is easy for him to convince himself that his first duty is toward the railroad company which he serves, and that if he breaks a law he is obeying a higher law. The consequence of all this is a demoralizing and humiliating situation for the man of conscience and of sense who finds himself responsible for the traffic of a railroad.

This is the situation which the Joint Traffic Association seems destined to destroy if that Association holds together. The firm, able and judicious administration of the agreement have indicated that the influence of the Association has only begun to be felt. We have looked forward to the extension of its methods over the whole country, and thus we have felt that the Joint Traffic Association is destined to be the strongest possible machine for the support of the Interstate Commerce law. It has already been imitated by the roads southwest of St. Louis, which have established a permanent board of managers at St. Louis similar to that which sits in New York, and we shall expect to see further extensions of the plan as its strength and its benefits become apparent.

The 109th Street Collision.

The New York State Railroad Commissioners have issued an opinion on the elevated railroad collision of Saturday, March 21, in which they propose an inadequate remedy for the fault which led to the accident. It will be remembered that this was a butting collision between a southbound passenger train and northbound empty engine, on a portion of the road (a third track between the first two) which is used as single track; that is, for the running of trains either way, as convenience may require, on the same track. The collision occurred on a part of the structure more than 50 ft. above the ground, but, fortunately, the speed was slow and the injuries to persons were slight, though parts broken off the engine fell to the street. A number of southbound express trains are run over this track daily, the last one clearing the single track at 2:11 p. m. About an hour later an empty engine travels in the opposite direction over this track, but on Saturdays, owing to the necessity of running more trains in the early afternoon, this empty engine has to start north (from Fifty-ninth street) about 2 o'clock; and, the middle track being occupied at that hour by the express trains, it has to run on the regular northbound track.

On the Saturday in question, the engineman, having never before been on this run on a Saturday, forgot the difference between the Saturday regulations and those for other days, and started off on the middle track the same as he had done on Friday and other days preceding, and collided with a passenger train. He had just come in from the south on the middle track and the dispatcher says that he expected the engine would, as on previous Saturdays, pull up a short distance to a crossover and then back down to the east or north bound track. The engineman and the dispatcher (the officer who had charge of the starting of all trains) disagree as to what they said to each other, each trying to throw most of the blame upon the other; but the Commissioners hold the dispatcher primarily responsible for the collision, his duty being to know precisely what instructions the engineman had received before he started. The fact that the engineman had never before run this trip on Saturday "may slightly excuse him," but, as he was experienced, the Board attaches little weight to the excuse. Moreover, he violated a rule prohibiting a greater speed than six miles an hour on such a curve as that where the collision occurred. The Commissioners say that, in view of the fact that there is a different mode of procedure on Saturday from other days of the week, all engines thus starting from Fifty-ninth street on Saturday ought to have written orders.

This last clause of the decision ignores the important principle that habit or routine exercises an important influence on the safety of train management. It is familiar knowledge that the safety of passenger travel in America is to a considerable degree dependent upon the regular running of trains and the regular assignment of men to the same train. What assurance would there be that the Fifty-ninth street dispatcher would not forget to issue the written order the same as he forgot to give the oral order? The only thorough rule to fit this case is one that will work in the same manner on any or every day of the week. Even a strict code like the American Railway Association standard would be subject to criticism if depended upon in such a situation as that on the Manhattan, for dependence upon ordinary time-table schedules and meeting rules is a doubtful safeguard where the procedure is not the same every day. Mistakes made on the first day that a new time table goes into effect are reported every now and then, showing the constant liability of trouble from defective memory. (The safety of schedules that are run on Sunday but not on other days is largely due to the cessation of business outside the railroad, the omission of a large number of trains and the comparative quiet of the day; all these tend to constantly remind the engineman that his usual routine is not in operation.) The old-fashioned rules for single track being thus inadequate the only recourse, for a piece of road like the *single track* line of the Manhattan, is the use of written orders for each train *all the time;* and we are not sure but the staff sy tem or automatic track-circuit block signals are also necessary.

A simple starting signal, at Fifty ninth street, such as the English roads learned to use, even on single track, many years ago, would probably have prevented this collision; for with it the dispatcher would have been depending upon the signal instead of on his eye or his voice to keep forgetful enginemen from getting away from him. With a semaphore, kept normally at danger, the engineman would not have started out except after a positive approving act by the person who lowered the signal. This would not be so sure a safeguard as the staff, or written orders, but would be next best. The absence of a fixed starting signal is the more noticeable when it is remembered that the Fifty-ninth Street Station has a regular tower with interlocked switches and signals.

The Reports of the Lake Shore and the Michigan Central.

When we take up the annual reports of the Lake Shore and of the Michigan Central we look first at the general course of earnings, for we feel that the conditions on these two stable properties, lying on the greatest trade line of the country, and serving a great variety of interests, must be uncommonly indicative of general conditions. The reports of both companies for the year ending Dec. 31, 1895, are now before us. The gross earnings of the Lake Shore were $21,016,035, and those of the Michigan Central were $13,651,421. The tables below give the miles worked for several years, and show how 1895 compares in earnings and expenses with recent years. This comparison is by percentages; that is, it shows the percentage of increase or of decrease of the business of 1895 as compared with each of those years.

Miles worked.

	1895.	1894.	1893.	1892.	1891.
Lake Shore	1,440	1,440	1,440	1,445	1,445
Mich. Cent	1,642	1,634	1,634	1,639	1,609

Increase or decrease, per cent., gross earnings.

	1894.	1893.	1892.	1891.	1890.
Lake Shore	I. 7.4	D. 11.3	D. 6.2	D. 1.9	I. 0.7
Mich. Cent	I. 8.5	D. 15.6	D. 14.2	D. 9 9	D. 5.8

Increase or decrease, per cent., working expenses and taxes.

	1894.	1893.	1892.	1891.	1890.
Lake Shore	I. 10 5	D. 14 9	D. 7.7	D. 0.4	D. 2.5
Mich. Cent	I. 11.4	D. 17.2	D. 15.5	D. 8.3	D. 5.1

Increase or decrease, per cent., net earnings.

	1894.	1893.	1892.	1891.	1890.
Lake Shore	I. 1.2	D. 1.8	D. 2.5	D. 5.2	D. 3.0
Mich. Cent	I. 0.8	D. 10.8	D. 10.2	D. 14.5	D. 7.7

The gross earnings of both of these roads increased from 1890 up to 1893 and then dropped, to go up again in 1895. In fact gross earnings on both of these roads increased each year from 1885 to 1893. Whether or not the gains and losses were matters of rates or of volume of traffic, or of both, may be seen from the tables which follow:

Ton-miles (millions).

	1895.	1894.	1893.	1892.	1891.	1890.
Lake Shore	2,476	2,196	2,428	2 435	2,169	2,157
Mich. Cent	1,488	1,210	1,356	1,550	1,368	1,340

Passenger miles (millions).

Lake Shore	211	198	334	248	247	225
Mich. Cent	163	155	286	203	202	196

Rate per ton-mile.

Lake Shore	0.561	0.572	0.587	0.599	0.628	0.626
Mich. Cent	0.617	0.687	0.680	0.684	0.722	0.695

Rate per passenger-mile.

Lake Shore	2.139	2.229	2.092	2.175	2.177	2.246
Mich. Cent	2.252	2 258	2.123	2.211	2 249	2.276

In general, it appears, as one would expect, that both roads have had the common experience of a general decline of rates and that the gains in gross earnings have been from increase in the amount of business done. On the Lake Shore the ton-miles and the tons carried were the largest in amount in the history of the company, and the rates were the lowest; but the average train load was increased from 267.2 tons in 1894 (275.7 in 1892 and 1893) to the very remarkable figure of 318.5 tons. The freight-train mileage was reduced from 8,218,912 in 1894 to 7,773,337 in 1895. In no year since 1889 was it so small, notwithstanding the gain in ton-miles. In the five years, 1890 to 1894 inclusive, the average train load was 272 1 tons; in the five years, 1885 to 1889 inclusive, it was 258.6 tons; in 1895 it was, as we have said, 318.5 tons. This gain is, we suppose, the direct result of the improvements that we have described in detail in the past, especially in our issues of Feb. 8 and 15, 1895; and the next result is low operating expenses. The tons carried in 1895 increased 18 per cent. over 1894; the ton-miles increased 13 per cent. But that item of working expenses which is immediately affected by the tons moved, viz., "Conducting transportation," increased less than three-fourths of one per cent. Locomotive fuel and water, oil and waste for locomotives, and train service actually cost less in 1895 than in 1894. The total of working expenses, it is true, increased $1,416,237; but two items, new locomotives and new freight cars (charged to working expenses) increased more than this, viz., $1,497,865. There was a small saving in maintenance of way and structures, $76,331, or 3½ per cent. This of course is perfectly legitimate in view of the great expenditures of the past Other changes were small, but the net result is an increase less in amount than the cost of the new engines and freight cars. This looks like a triumph of good management.

The net earnings were $6,447,815 and dividends were paid on the common stock to the amount of $2,967,990 (six per cent.), leaving a surplus of $60,325. The total capital stock stands unchanged since 1871, at $50,000,000, of which $533,500 is guaranteed at 10 per cent. The funded debt is now $43,442,000, $250,000 first mortgage bonds having been cancelled during the year. All of this bonded debt matures on or before Dec. 1, 1903, the first of the bonds beginning to fall in in two years. As this debt now bears seven per cent. interest a large saving can be made in refunding.

The figures given earlier in this article show the general course of the business and rates on the Michigan Central for several years. Comparing 1895 with 1894 the tons moved were 7,470,951, a gain of 21 per cent.; the ton miles were 1,487,989,830, a gain of 23 per cent.; the passengers carried were 2,663,141, a gain of only 13,426, and the passenger miles were 163,092,843, a gain of 5¼ per cent. Rates on both passengers and freight fell, and working expenses increased, and the result was a gain of $28,284 in net, bringing the net earnings up to $3,468,189. Dividends to the amount of $749,520 (four per cent.) were paid and a surplus of $60,830 was added to the balance carried over. The capital account stands practically unchanged. This road has $8,600,000 first mortgage 7's maturing in 1902 and $2,000,000 first mortgage 5's of the same year, so like the Lake Shore it can look forward to a reduction of interest charges if future enterprises do not add to the bonded debt.

Operating expenses increased $1,039,123 to $10,183,231. The heaviest increases were repairs of roadway, $252,059; repairs of freight cars, $283,655; repairs of locomotives, $80,854; repairs of passenger cars, $60,935, and track rentals and terminals, $102,788. There were but few items of decrease, but the net increase in "conducting transportation" was only about $280,000 notwithstanding the great increase in the freight movement. Here too, as on the Lake Shore, there was a substantial gain in the freight-train load, viz., from 192 tons to 215.

The broad-minded statesmanship of modern legislation is well illustrated in a remark quoted, at the dinner given to Assemblyman Armstrong in New York the other day, by Mr. Potter, the man who is accorded the chief honors for getting the free-bicycle law passed by the New York Legislature. Mr. Potter, after insisting that Assemblyman Armstrong was chiefly responsible for the passage of his bill, "went on to make an appeal for good roads, saying that he had been told by a prominent member of the legislature that when the wheelmen of the state make as strong an effort for good roads as they did for the passage of the Bicycle Baggage bill, they will get what they seek." The question of might being settled, the question of right is of little account. The legislator will find, however, that getting the farmers of New York state, or of the nation, to tax themselves for improved roads is somewhat different from "striking" a big railroad corporation for a 15-cent reduction on the transportation of a bicycle. The two problems are about as different in magnitude as building a steamship and whittling out a baby's raft to float in a washtub. It is no exaggeration, however, to say that the principle or rule of conduct followed by such a legislature as that of New York state this year is likely in every case to be just about the same in one problem as in the other. The most novel thing in connection with the attitude of the New York legislators in the matter of the bicycle bill was to see them bowing down to something other than the "labor" vote. The gentleman vote, the bloomer vote, or whatever we may call the power wielded by the young people whose chief aim in life is to come home tired and dusty on Sunday night, may be as contemptible a fetish, from the true statesman's stand-

point, as any other kind of "vote" that ever scared a law-maker into voting on a bill with his eyes shut; but we have at least had a momentary relief from the labor vote. When it comes to voting on the expenditure of $5,000 to $10,000 a mile on highways, however, the member from the rural districts will probably find some people pretty near home—the taxpayers—who have decided views on the subject. Not until they can make the railroads pay *all* of the taxes will the voters of the country towns be as willing to give the bicyclers smooth roads as they are to compel the railroads to give them a little discount on their wheels.

Seating capacity is an element that does not often come up for consideration in designing a freight house; the habitues of such a place are supposed to be propelling rolling stock most of the time, and when they are not at work they can generally find a box or a bale that will afford a very comfortable resting place. Railroad architects must be well versed in the general subject, of course, for one of the difficult problems in designing passenger stations is to provide seats for the maximum number of passengers, at a small station, where the average number of people at each train is about 1 or 2, and where the minimum is so far below nothing that it is questionable whether the company ought to afford anything better than a fence rail for passengers to sit on. At such a station the agent considers himself lucky if he gets a decent chair for himself. In extreme contrast to this is a station where the freight house must have seats for 300 customers. Such a case is that of the Erie Railroad at Pier 20, North River, New York City, where the company has recently agreed to furnish accommodations of that nature in consideration of the promise of all the receivers of California fruit to order their goods shipped over the Erie lines. Quick handling and delivery being essential with such perishable freight, the consignees sell it by auction as soon as it comes out of the cars; and the seats are for the bidders. How the Joint Traffic Managers will deal with such a pronounced case of extra facilities being given without extra pay we do not know. If the Erie's competitors are like the rival passenger men between New York and Boston, where every new train by one road necessitates starting a similar train by the other, the Managers will have to authorize the construction of 300 seats at every Trunk line freight terminal in New York. That, however, would not be very costly (300 × 4 sq. ft. of pine boards × 2 cents per sq. ft. × 10 terminals + 50 per cent. for engineering + $140 for contingencies), say $500 in all; and we should advise that it be done. We venture to say that very few traffic quarrels have been settled as cheaply as that.

Mr. Daniels' red-capped porters seem to be popular; the plan is copied by both friends and enemies, or, in other words, by a connecting Vanderbilt road, the Chicago & Northwestern, and by a competing line, the Pennsylvania. The latter now has porters at the Cortlandt street terminus in New York City, where a force will be on duty from 6 a. m. until midnight. Porters will, if desired, accompany passengers, carrying their hand baggage, to the American Steamship Line pier, to the elevated railroad station, or to the station of the Central Railroad of New Jersey. There will also be porters at the Desbrosses street station in New York, who will go with passengers to the Ninth avenue elevated station. We are glad that at least one Western road has adopted this military notion from the effete monarchies of Europe. As long as the red-caps were to be found only in New York the Western feeling that the Eastern cities are growing undemocratic and unjustifiably stuck up, was being constantly aggravated, and any further widening of the breach, in this peculiar presidential year, would have been a misfortune. The Chicago & Northwestern, which employs the porters at its Chicago station, announces that "no fee will be necessary." Whether the giving of tips is absolutely prohibited, is a question which the reader must decide for himself, by reading between the lines. Speaking of tips, the bicycle riders of New York, who have just made such a strenuous fight to get 10 or 15 cents apiece out of the railroad companies, seem to be rolling in wealth. The editor of their official paper advises everyone who has any doubt that his wheel will be well cared for in the baggage car to offer the baggageman a quarter. Evidently we must conclude that the tremendous energy put into the legislative contest was not for the purpose of asserting a cherished legal right, but rather for the privilege of exercising benevolence toward the down trodden baggageman.

A recent decision of an Illinois court, in a suit brought against a street railroad in Chicago, has been widely heralded as strengthening the power of city councils to reduce fares on street cars. In several cities the newspapers have made the decision the text of a demand, which they seem to think must now be quickly acceded to, for three-cent fares. But the Chicago *Inter-Ocean*, after talking with the lawyer of another street railroad in that city, states that the decision will not bear the interpretation put upon it. The court has merely decided a question of pleading. The substance of the decision is in the following language:

> Defendant had no right to lay railroad tracks in the streets of the city or to operate cars therein, except by permission of the city. In giving such permission the city could prescribe such conditions as to rates of fare as it saw fit. In the absence of any showing by defendant that it has directly or indirectly permission of the city to run cars in the streets and charge a higher rate of fare than is prohibited by the general ordinances of the city, we think the demurrer of appellee was improperly sustained. We do not regard the railroad and warehouse act as applying to the operation of street railways within the limits of the city. The judgment of the Superior Court is reversed and the cause remanded.

The long settled right of a city to prescribe fares in granting a franchise is reaffirmed, and that is all. One of the judges filed a separate opinion saying:

> "I suspect this Court is being played upon for some ulterior purpose. Such things are known to have happened, and I do not like to put upon record the names of cases in which it has been done. I concur in reversing the judgment, and warn whoever may be concerned, that no principle or doctrine must be taken as established by the decision of this case beyond one of pleading, upon the assumption that the whole subject matter is fully stated in the declaration."

The recent action by the Atchison, Topeka & Santa Fe in abandoning a portion of what is known as the "Great Bend Extension" in Kansas has caused the local correspondents to rush into print with a vigorous protest and threats that the State Railroad Commission will soon "take a vigorous hand" in compelling the road to restore the train service. The portion abandoned is 40 miles of road in Western Kansas at the far end of the Atchison's Selkirk branch. For the entire distance it runs directly alongside the main Colorado line of the Missouri Pacific. Every station is served by the latter road efficiently. The Atchison has been running one daily mixed train and maintaining its line, while, according to the statement of a prominent official of that road, the business has been done by the other road. The officers of the Atchison now propose to let the courts decide whether under such circumstances they can be compelled to throw away thousands of dollars annually, without a particle of benefit to the communities along the line.

Traction engines running on wagon roads in England have to pay a license fee of £10, presumably per annum. The amount of territory covered by this license we do not know; the information came out in a hearing before a Parliamentary committee in which county officials seem to have been the principal parties interested. The license money is collected chiefly on account of the damage done to the road by these heavy vehicles; and the officials of Staffordshire, Buckinghamshire and Gloucestershire were in favor of raising the fee to £20. It was also suggested that such engines be forbidden to draw more than five tons up hill or to draw more than three wagons at a time.

NEW PUBLICATIONS.

Field-Book for Railroad Engineers. Circulars and Parabolic Curves, Turnouts, Vertical Curves, Levelling, Computing Earthwork, Transition Curves on New Lines and Applied to Existing Lines, together with Tables of Radii, Ordinates, Long Chords, Logarithms, Logarithmic and Natural Sines, Tangents, etc., and a Metric Curve Table. By John B. Henck, A. M., late Professor of Civil Engineering in the Massachusetts Institute of Technology. Second revised edition. Pages XVI., 312. Morocco with flap. New York: D. Appleton & Co. Price, $2.50.

In 1854 appeared the first American Railroad Engineer's Field-Book. There had been some previous treatises on railroad curves, but no comprehensive field-book, and such a thing was greatly needed. So it came about that Prof. J. B. Henck's Field-Book for Engineers, an excellent work, became at once the standard reference book for the field, and has played its part on almost all of the great railroads of this country. In spite of the rapid advance of railway methods, the operations treated in this book did not change to any great extent, and the book remained in favor without revision till 1881. By this time a few methods had changed, notably the practice of constructing turnouts with the switch rail a part of the curve and tangent to the main track, and the introduction on some few roads of the transition curve. In the edition of 1881 an appendix was introduced giving turnout computations in accordance with the then practice for stub switches, a brief discussion of two forms of the transition curve and certain problems in curve location. Some changes in the tables were also made.

In the second revised edition, just issued, new plates have been made, except for the tables, and the matter formerly in the appendix has been amplified and put in its proper place in the text. A table of curve elements based on the metric system has also been added. A yet greater improvement might well have been made by making new plates for the tables and reducing the logarithmic tables to five places with proportional parts and the natural tables to four places. This would have made the book somewhat smaller and would have saved many minutes of the field engineer's time.

Mr. Henck still uses the term "crossing" for "crossover," which is unfortunate, in view of the widely accepted different meanings of the two terms. He also retains the treatment of parabolic curves, which he justifies on the ground that they may be used by landscape gardeners, and make good vertical curves in grades. We hardly think this a sufficient excuse, and are more than half inclined to believed that the matter is retained because of a more or less unconscious feeling of pride in this creature of Professor Henck's mathematical brain. It is a very pretty treatment, and as it occupies but a few pages, it does little harm, although it should be remembered that no matter that is not of direct value to railroad engineers should find a place in a field-book for their use. We find no mention of that formula of formulas for the locating engineer, $O = \frac{1}{8} N^2 D$. On the other hand, it is well that Professor Henck has retained his original discussion of turnouts, because we are now rapidly passing from the stub switch to the split switch, which is computed with a switch angle.

Although the use of rail-length chords in the discussion of the cubic parabola as a transition curve is of doubtful value, still the treatment of this curve here given, following that ascribed by Professor Rankine to Froude, is one of the best and most rational we have seen. A brief statement of the theory of compound transition curves is given for those who prefer them.

On the whole there is very little in the new volume that could be spared, and it will be welcomed by the followers of the old "Henck" as a great improvement on the original work, which has been a standard guide for nearly a half century.

The Harbor of Montreal.—Annual Reports of the Harbor Commissioners of Montreal for the year 1895.

The report of the Chief Engineer to the Harbor Commissioners, Mr. John Kennedy, informs us that the principal new works of the year ending Dec. 31, 1895 were, completing the large pier at Hochelaga and the dredging of the adjoining basins; the deepening of half of the Wind Mill Point Basin and the beginning of wharf extension at the upper end; the extension of the guard pier to within 1,000 ft. of Victoria bridge, and the dredging away of a considerable part of the lower end of the island shoal for the Harbor Enlargement Works.

The new pier mentioned as completed is 850 ft. long by 180 ft. wide and projects into the river with a downstream inclination of 45 degrees with the shore wharves, to allow of its being easily approached from the strong current outside. It is of crib work filled with dredged material, the filling being chiefly rock with some sand and fine silt. The total wharf frontage of the new pier is 1,713 ft. and the depth alongside when the basins are finished will be about 27½ ft. at low water.

The dredging plant in use during the year included six dipper dredges, six floating derricks, a double land derrick, one drilling and blasting boat, with tugs, scows and a floating shop. A table of the cost per cubic yard of dredging done in the last 20 years is given in this report. In 1875 the total cubic yards amounted to 151,719 at a cost of 45 cents per cubic yard. In 1879 about 190,000 cubic yards were dredged at a cost of 21.63 cents. In 1891 302,557 cu. yds. cost 21.08 cents per cubic yard, and in 1895 496,528 cu. yds. were dredged at a cost of 20.02 cents. The cost of work done by the large new dredges continued to be greatly cheaper than work of the same kind done by the small dredges.

In the report of the Chief Engineer for the year 1879 mention was made of the successive lowering of the lowest stage of water, year by year, for the 15 years which had preceded, which was attributed to the lower water in the tributaries of the St. Lawrence above Montreal. Since 1879 this lowering has gone on still more rapidly, but not steadily, and last year it was 20 in. below anything before known. In 1849 the lowest water on the old lower lock sill was 16 ft. 10 in.; in 1879 it was 15 ft. 5 in., and in 1895 it was 13 ft. 3 in. The clear depth in the channel during navigation was 27 ft. 6 in., in 1888; 26 ft. 1 in. in 1891, and 24 ft. 5 in. in 1895. The important practical question now is what new surface line is to be taken for lowest water throughout the harbor; or, in other words, how much the bottom must be deepened to give 27½ ft. of water everywhere at the lowest stage.

The Harbor Commissioners ask the Government for authority to raise three million dollars in addition to the one million dollars already authorized, the whole to bear interest at a rate not greater than 3½ per cent. They point out, in urging the expenditure of four million dollars that no public funds have hitherto been appropriated to the port of Montreal, although the business at Montreal consists very largely in handling goods through to or from the West.

The year was one of continued unusual depression in the shipping business. The sea-going vessels which arrived were 640, being 90 less than in the year before. The total tonnage was 1,069,386, only 27,523 less than the previous year. There was a considerable falling off in the quantity of grain and lumber exported from Montreal.

The vessel with greatest draft that passed down the channel last season drew 27 ft. 3 in., the depth in the channel that day having been 29 ft. 9 in. After that the river became unusually low, and later in the season the deepest draft was that of the Iona, which vessel passed down Nov. 21 drawing 24 ft. 6 in., the water in the channel having been 25 ft. 4 in.

A table is given showing dates of opening and closing of navigation for 10 years. The date of opening ranges from April 2 in 1894 to May 1 in 1887, and the date of closing from Dec. 3 in 1890 to Dec. 26 in 1894. The earliest arrival from sea was April 23 in 1892. The latest departure for sea was Nov. 28 in 1887.

TRADE CATALOGUES.

The Canadian Pacific Railway has issued an advertisement in the shape of a "Picture Map of London," which must be of interest to many of its customers this side of the Atlantic, and is well worth preserving. Most Americans who tackle a map of London find it a thing of such magnitude that they throw it aside in despair unless some special purpose compels them to master it. This "picture" affords a pleasant relief to such persons, being limited to the territory that can be brought within the conventional "bird's eye" view without making the scale too small. It takes in all from Hyde

Park on the west to the Tower on the east, and from Primrose Hill on the North to St. George's Circus on the south. The locations of the 15 principal railroad stations and of most of the public buildings are clearly indicated. The only advertising the Canadian Pacific gets out of the map is in the caption and in the very modest label attached to the building, near the Royal Exchange, in which its office is located.

Freight, Mine and Dump Cars and Car Wheels. The Bloomsburg Car Manufacturing Co., Bloomsburg, Columbia County, Pa. Export Agents, H. C. Dayton & Co., 44 Dey street, New York.

This concern sends a pamphlet of 64 pages describing its product. The company builds standard freight cars of all sorts as well as a considerable variety of special cars and is prepared to design special cars and furnish complete drawings and specifications for them. The line of dump cars shown is quite large, including side dump cars and hopper bottom cars for the use of contractors and for industrial uses. A recent improvement shown is a hopper bottom cement car, built entirely of $\frac{3}{16}$-in. steel plates with the exception of the sills and ties which are of white oak. A specialty shown is the Bowden self-oiling car wheel which has been considerably used for mine cars. The beamless brake which we have described in times past is also shown.

The Stratton Combined Separator and Steam Receiver.—The Goubert Manufacturing Co., 14 and 16 Church street, New York, sends us a small pamphlet calling attention to the Stratton combined separator and steam receiver. This is an appliance for connecting into steam pipes for the purpose of separating moisture from the incoming steam. The apparatus is made in various sizes, for steam pipes of 5-in. diameter to 14-in., the diameter of the shell varying from 22 in. to 48 in., and the prices ranging from $250 to $1,000.

Price's Safety Frog.

The accompanying illustrations show a frogless switch, or one in which the main line rails are not cut at the frog, which has been in use at Verona on the Allegheny Valley Railroad for several years. Fig. 1 shows the frog set for main line and Fig. 2 set for siding. Fig. 3 is a view of the "protector bar," arranged to prevent the premature throw of the switch.

In the *Railroad Gazette* of Sept. 18, 1885, was given a description of this frog in its original form. Since that time several changes have been made. The frog, which formerly was made in one casting, now consists of two parts, both made of rails (except a small casting used as a filling piece) and arranged to meet each other across the unbroken main rail when the switch is thrown for the siding.

One of the principal improvements has been the "protector bar," fitting up to the gauge side of the lead rail, between the switch and frog, as shown in Fig. 3. Its object is to guard against the premature throw of the switch when a train is taking a siding, which experience has shown to be a possibility. In the absence of such a

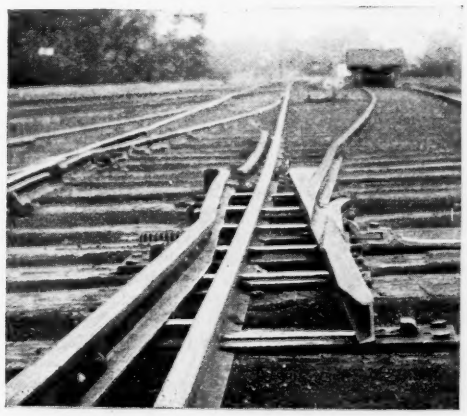


Fig. 1.—Price's Frog Set for Main Line.

provision the man at the switch, unless well posted and attentive, is liable to set the switch for the main track as soon as the last pair of wheels clears the switch rails; and if so the switch and frog being moved simultaneously by the same throw), he will pull away the movable frog from its siding position before the last trucks have passed over it, thus causing a derailment.

One remedy for this would be the ordinary detector bar used in interlocking, and this was tried for some time. But, owing to its cost, weight and inefficiency with narrow tread wheels, some other device was sought. The "protector bar," or inside spring rail, was adopted about a year ago and has given the best results. The wheels of a train going on a siding press back the bar and push the stirrup, or hooked lug, into a notch in the operating rod, thus preventing any movement of this rod, and consequently of the frog while the stirrup is in this position. The inventor, Mr. C. B. Price, Superintendent of the River Division of the Allegheny Valley Railway, informs us that since the bar has been in use it has never caused a moment's trouble or delay and has never been altered, repaired or touched in any way. It will be seen that it may be made at a very slight cost, as it may be made entirely of second-hand rails.

It will be noticed that the frog has attached to it "safety wings," or inclined planes that fit over the main line rails for some distance. These are not only necessary in this kind of frog for the safety of a main-track train which may find the switch wrong and the frog resting upon the main rail (and which can in that case pass over the safety wings as readily as a train can pass in or out of a siding over a Wharton switch), but they also serve the equally useful purpose of giving to the movable frog, when in everyday use for siding purposes,

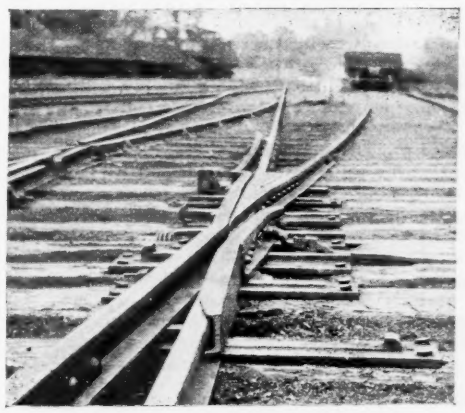


Fig. 2.—Price's Frog Set for Siding.

a degree of stability and safety which it would seem impossible for any movable frog, not furnished with such an ample longitudinal bearing on the rail, to have.

The Abatement of Dust

In a recent issue of the *Revue Generale des Chemins de fer*, M. G. Liebeaux describes the methods adopted on one of the lines of the Orleans Railroad to abate the dust on a sand ballasted track.

The line is that portion of the road from Paris to St. Nazaire, between Orleans and Savenay, 214 miles. It was ballasted with Loire sand and high speed trains raised a most intolerable cloud of dust. Formerly, when express trains were not very numerous and their maximum speed did not exceed 40 miles an hour, the dust was endurable, but now that these speeds have arisen to 50 and even more than 60 miles an hour, it has become unendurable. There were a few years during which, for four or five months out of the 12, the express trains rolled along in a thick cloud. The passengers and trainmen reached their destination in an unrecognizable condition; the lookout in the rear could see nothing and was often obliged to wrap his face in a damp handkerchief in order to breathe. The dust penetrated the working parts of the engines and cars causing rapid wear, while the ballast itself was carried away in such quantities as to entail a considerable expense each year in replacing it.

In 1883 a short section of track was covered with broken stone 4¾ in. deep. The dust disappeared, but the results were not satisfactory from an economical standpoint. No pains were taken to keep the stone on top of the sand, so that any work done on the track had the effect of raising the sand to the surface. Coarse grass was afterward tried, but without effect.

In 1888 a fresh attempt was made to cover the sand with the broken stone, but it was done in an entirely different way, one object being to reduce the cost per mile. It was based upon the idea of using as thin a layer of stone as possible and of always removing it before any repairs were begun. The thickness adopted was only 2½ in., which, for a width of 21¾ ft., amounts to 4½ cu. ft. per running foot of double track. The stone was broken to pass through a 2½-in. ring, and when the excess of sand had been removed from the top this stone was spread evenly over the surface and handled with the usual forks made for the purpose. The expense was about $770 per mile. The trouble with the dust was entirely removed regardless of the speed of the trains.

The appearance of the track was that of one entirely ballasted with broken stone, and the sand was so well protected that none of it ever rose. At first an attempt was made to reduce the expense by breaking off the application at stations for distances ranging from 300 ft. to 1,200 ft. But this had to be given up, for the whirl of air caused by a passing train would fill the cars in an instant with a cloud of dust, and all the advantages of a subsequent covering would be lost. So that now the only break is made at stations where all trains stop.

The cost of application has already been given, but the saving effected is difficult to calculate. It may be stated, however, that since this covering has been in place, all loss of sand has ceased, and it has been possible to do away with several plants that were worked every year to get sand from the Loire at low water; and the suppression of the dust has materially lessened the wear on the rolling stock, and with this the consumption of coal in consequence of the lower resistance offered by the train. Then, too, the wear of the rails has been decreased since the fine sand, acting like emery could not fail to exert a destructive influence upon everything which it covered.

In the maintenance it appeared at first as though a good deal of extra labor would be entailed. It requires about 10 minutes for a section hand to remove a running yard of the covering from a single track, and about 12 minutes to put it back again, occasioning a loss of from one-fifth to two-fifths of the time spent in work. But in spite of this no additions to the force have been required. The removal and replacing is done when local conditions or the passage of trains renders other work upon the track impossible.

Foreign Railroad Notes.

On April 4, on the occasion of a football match between England and Scotland, at Glasgow, the Caledonian Railway ran an excursion from Aberdeen, 153 miles, at a round trip fare of 4s. 6d., or about $1.08 for 306 miles, equal to 3½ mills a mile. About 1,500 passengers were carried on this excursion, although some of them did not return until the next day or the day after, and paid 25 per cent. additional. It is said that the cars for this excursion had to be run empty about 300 miles.

In spite of the unsatisfactory income of many railroads in Spain, 394 miles of new line were opened for public traffic in that country in 1895, besides 53 miles of a private railroad owned by a mining company. One of the new lines is 158 miles long.

The Prussian state railroads have put seats into all their fourth-class cars, in which formerly there was "standing room only." It used to be urged that they were better without seats, as they afforded place for tool-boxes, market-baskets, and the like, which numbers of their patrons carry with them.

During 1895, in Austria-Hungary and the Balkan country occupied by the empire (Bosnia chiefly) 609 miles of new railroad were opened for traffic, with 234 new stations or stopping places, and 35 junctions with other railroads. More than four-fifths of this new mileage (496 miles) was in Hungary, 87 miles in Austria, and 26 miles in the occupied country. This mileage was in 42 different lines, so that the average length was only about 15 miles. In Hungary this average length was 26 miles; in Austria, less than 5 miles. There is a new station for every 2¾ miles of new road.

The French Minister of Public Works has urged the railroad companies to give the public schoolmasters and schoolmistresses tickets at half price. The companies have not accepted his suggestion, but the management of the state railroads has.

The Austrian Railroad Minister (a new office) very shortly after his accession issued a circular in which he said that in that short time he had received such a number of anonymous communications, purporting to come from employees or other subordinates in his department, that he felt compelled to announce publicly that he requires full confidence and manly frankness. Those who openly apply to the Minister or to their immediate superior will always be heard and a fair and unprejudiced inquiry will be made into any complaints they may make; but the very worst way of calling attention to

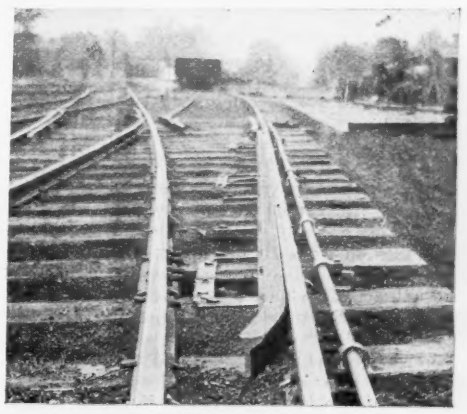


Fig. 3.—Price's Protector Bar.

matters is by anonymous communications; and all persons in the service are notified that no attention whatever will be paid to such letters. The Minister, Chevalier von Guttenberg, is a soldier by profession.

A Combined Punch and Straightener.

The illustration shows the No. 2 Combined Horizontal Punch and Channel Straightener, of the Hilles & Jones Company. As will be noticed, this is a double geared machine, with the first driving shaft under the main frame so that if desired it can be run to any distance to meet convenient belting and thus avoid any belts around the machine proper. One end of the machine is intended for the ordinary punching of angles, the die being held in a cast steel block with the center as close to the edge as is needed for the work to be done. The other end of the machine is arranged for straightening or bending channels or I-beams. The sliding head consists of two pieces, one of which can be fed up by means of the hand wheel, the range of feed being about 3 in., thus allowing a number of sections to be used without altering the main dog or bending block. On the back of this jaw are two stationary dogs which can be set at any required

distance center to center, depending on the work to be done. There is a long carrying roller on each side of this jaw which facilitates handling the work. The clutch, which is on the opposite side of the machine, is worked from either hand as desired.

The whole machine being complete on one foundation occupies but little room and is substantial and convenient. Where preferred the punch end of the machine can be made with a round stake holding the die so that small diameters of flues, flanges of channels or I-beams, etc., can be conveniently worked, or the nose can be carried up to receive separate knife blocks for cutting off bars, either flat, round or angle. This machine is built in several different sizes, depending on the capacity desired The punching capacity of this tool is equal to punching 1 in. diameter holes through ⅞ in. thickness, and the bending end will handle 10 in. channels of ordinary section.

Conveying-Belts and Their Uses.

Much valuable information on the above subject is given in a paper presented at the February meeting of the American Institute of Mining Engineers by Thomas Robins, Jr., of New York, and as there is little information published on the subject a review of the paper will doubtless be of service to many of our readers.

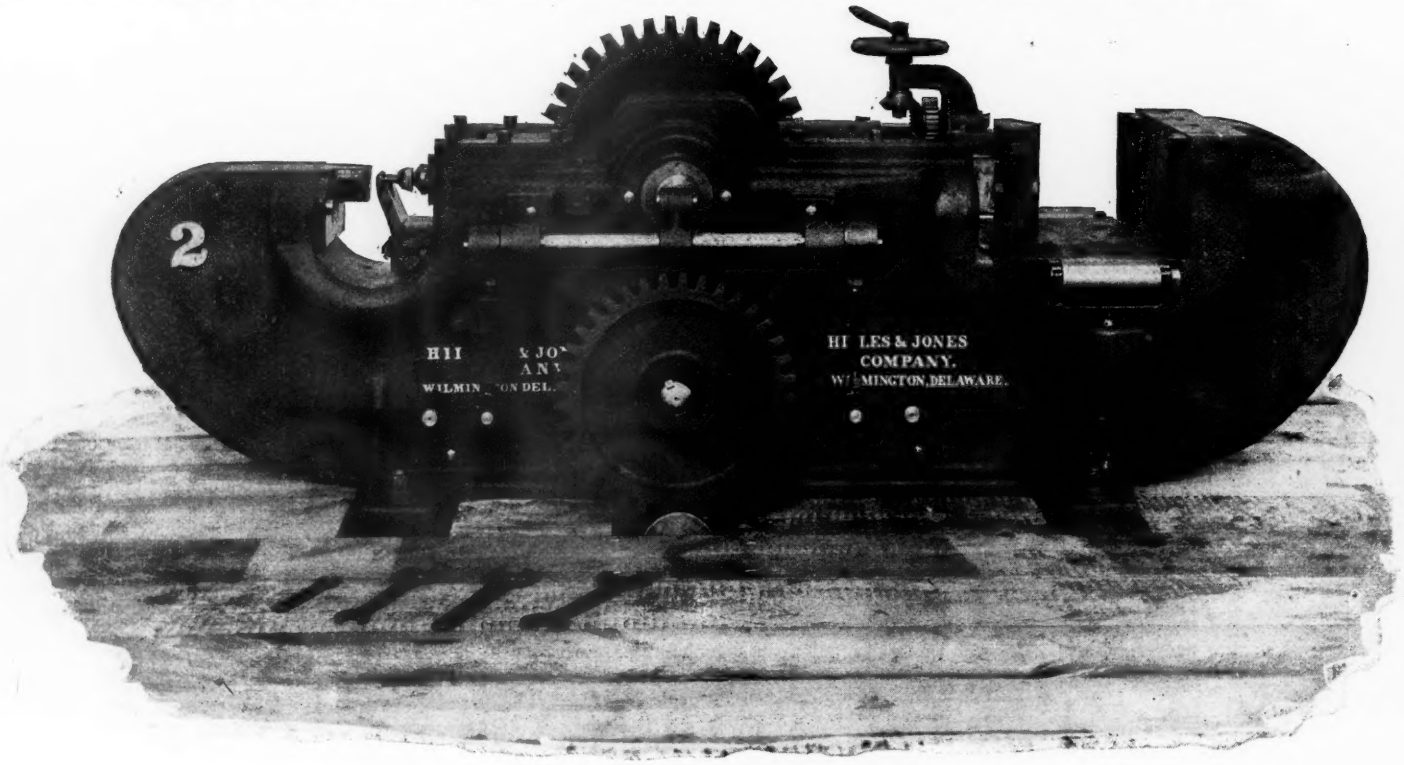
About six years ago Mr. Robins became interested in the subject while on a visit to a large metallic iron-ore concentrating plant where he saw belts 500 ft. long used for conveying purposes. His attention was called to the fact that even in the best quality of belts the abrasion of the ore wears them out very rapidly, and he settled on certain points: First, the life of the cover of the belt represented about one-half the life of the belt, although forming less than one-fifth of the total thickness. Second, the tension on each fiber increased as the number of fibers bearing the tensile strain diminished. Third, that the strain was greatest in a line along the center of the belt.

In order to remedy these faults and to make an ideal conveying belt—that is, one which would disintegrate so evenly and completely that when its work was done there would be nothing left to repair—he speaks first of the best compounds of rubber which would make the most durable carrying surface, and second, the methods of supporting conveying-belts. He found in regard to the first as a result of 12 hours' steady running tests with four different compounds, and with 200 tons of ore in contact with the rubber per hour, that the mean percentage of loss by weight was .0132, the least loss being .0029.

In speaking of the four methods of supporting belts Mr. Robins says that the first method, where the belt lies flat on a straight-faced horizontal pulley, is inadequate, the material being liable to be jarred off the belt. The second method is similar to the first, but with the addition of skirt-boards at the sides to increase the capacity of the conveyor; but in this case the belt wears out very rapidly. The third method is but little improvement on the second, conical pulleys being used to raise the sides of the belt. The fourth is by three pulleys, one carrying the bottom of the belt and one on each side with its axis at about 45 degs. and each held in a pair of combination bearings which can be adjusted to different widths of the belts. Sometimes it is economy to combine the first and last methods and to have a pair of idlers running on vertical axes at right angles with the edge of the belt in order to keep it straight on the pulleys.

Mr. Robins finds it impossible to give any rule for determining the exact horse power required for conveying belts running at different speeds, but shows it is a simple matter to determine the necessary belt width and speed to perform certain duty when the weight per cubic foot of the material is known. In considering this he assumes that the load covers one-half the total width of the belt, the depth in the center equals one-fourth of its own width, and the load takes the form of an inverted triangle. The number of cubic inches carried on each running foot of the belt = $\frac{3}{8} A^2$ where A equals the width of the belt. Solve for A and we have the necessary width; but if one has not confidence in his own figures he will do well to refer to a table which Mr. Robins presents, and from which we will take two values in order to show the increased service of the belt for but a two-fold increase of width. A belt 12 in. wide and 4-ply, running at 100 ft. per minute, will deliver 187½ cu. ft. of material per hour, while a 24-in. 5-ply belt running at the same speed will deliver 750 cu. ft. per hour. Since the part, where the belt receives its load gets the greatest wear the material should not be allowed to drop vertically upon the belt, and should have a re-enforced cover along the portion receiving the load. Belts run thus will last for years.

Mr. Robins refers to the use of belts in carrying limestone in stone-crushing plants, ore in mines, clay in brick yards, coal in yards and power plants, grain in elevators, and customers' packages in large retail stores. He claims an advantage over metal conveyors in that the belt costs less to install, little to maintain and runs noiselessly, adding that no fundamental patent on the principle can be secured, thereby leaving it largely to the ingenuity of the engineer to adapt it to any particular case with which he has to deal.



Combined Horizontal Punch and Straightener.

Made by HILLES & JONES COMPANY, *Wilmington, Del.*

TECHNICAL.

Manufacturing and Business.

The Berlin Bridge Co. has the contract for the new 12-in. mill addition to the Pennsylvania Bolt & Nut Works, Lebanon, Pa., which will be about 100 ft. × 125 ft. in size.

The United States Projectile Co., of Brooklyn, N. Y., is erecting a new building, 100 ft. × 450 ft., of steel skeleton structure throughout. The steel work has been designed and will be erected by the Berlin Iron Bridge Co. The trusses have a clear span of 100 ft.

These officers of the Wellman Steel Co., West Chester, were elected last week: President, Wm. Burnham; Secretary, D. G. Stokes; Treasurer, J. Tatnall Lea; Board of Directors: Wm. Burnham, J. Tatnall Lea, E. H. McCullough, David Williams, Joseph Storm Patterson, Richard Peters, Jr., S. T. Wellman.

The La Burt car coupler manufactured by the New York Car Coupler Co., 126 Liberty street, New York City, has been adopted as a standard by the Cincinnati, Portsmouth & Virginia road. The company has also received a large order from the Kansas City, Fort Scott & Memphis.

The Rand Drill Company has orders for two of its 16 × 14 22 class C air compressors for furnishing compressed air in connection with a pneumatic system of pumping which is to be put in the works of the Weidman Silk Dyeing Company at Paterson, N. J., by the Pneumatic Engineering Co., of 100 Broadway, New York City. The contract for using the pneumatic power was made after a series of tests by the Weidman Company extending over a number of months.

The Morden Frog & Crossing Works announces that it has remodeled its plant and added a number of new machines, including two of the largest planers manufactured by the Niles Tool Works; a double end Bulldozer, with the Johnson improvements; air hoist in track to facilitate the quick handling of heavy material; new forges, Gisholt grinders, etc. To insure all the late devices and methods in electric street work, the company has added to its manufacturing staff Mr. Willis C. Lee, late Foreman of the Pennsylvania Steel Co.'s frog works, and for 15 years with that company. The works are now running day and night and the business outlook is reported as encouraging.

New Stations and Shops.

The Pennsylvania is said to have purchased land at Coatesville, on the main line west of Philadelphia, as a site for new shops, which will employ about 800 men when completed.

Citizens of Clearfield, Pa., have made a proposition looking toward the removal of the Beech Creek shops from Jersey Shore to that place. The shops are to be enlarged to double their present capacity.

Contractors will shortly be asked to bid on the new Union Station at Jacksonville, Fla., to be built by the Jacksonville Terminal Co. The plans for the building are practically those prepared two years ago The structure will be 361 ft. long and 131 ft. wide, with a main entrance in the center of the building fronting on Bay street. The building will be of brick and granite. The foundations for the structure are completed. This was an important part of the work, as the site was marsh land, which had to be filled in and piling driven to support the weight of the building.

Electricity on the New York & Brooklyn Bridge.

At a meeting of the New York and Brooklyn Bridge Trustees, on May 5, the Board decided to erect its own power plant for generating electricity for running the electric cars on the bridge. Chief Engineer Martin estimates that it will cost the company $106.50 a day to operate the cars. The bid of the Edison Co. was for $196.21 and that of the Brooklyn Heights Street Railroad Co. $188.

The Union Elevated Loop, Chicago.

Work was begun again on the Fifth avenue extension of the Union Elevated Loop May 8, all work having been stopped May 1 by the strike of the Bridge and Structural Iron Workers' Union, who asked an increase from 37½ cents an hour to 45 cents and double rate for overtime instead of one-and-a-half rate. A compromise was made giving the men 41¼ cents an hour and double rate for overtime. The superstructure for this side of the loop is now erected from a point about half-way between Lake and Randolph streets to Monroe street, and the work is being pushed as fast as possible. The Wabash avenue extension of the loop is completed from Lake street to Harrison and work on it has stopped. The Southern crossover is still a matter of contention, but the officers of the Union Elevated Loop Company are positive that they will get the right of way on Van Buren street.

The Southern California Harbors.

There has been a long and bitter fight between the neighboring bays of San Pedro and Santa Monica, Southern California, to secure the Government harbor work. The matter has been discussed and debated, in and out of Congress, for many months. The expenditure to be made by the Government for the harbor at either one of these points is great, and the local interests involved are important. A compromise measure has recently been passed by the United States Senate. Under this the location of the harbor is to be determined by an officer of the Navy to

be detailed by the Secretary, an officer of the Coast Survey to be detailed by the Superintendent, and three civil engineers to be appointed by the President. The decision of this Board will be final as to the location of the harbor, and the Board must make plans, specifications and estimates. When these are done and filed the Secretary of War may make contracts for the completion of the harbor, according to the project of the Board at a cost not to exceed $2,900,000. The bill appropriates $50,000 for the expenses of the Board.

American Society of Civil Engineers.

At the last regular meeting of the American Society of Civil Engineers plans and elevations were exhibited of 12 different projects for the new Society house. The announcement was made that the Board of Direction had selected the plans of Cyrus L. W. Eidlitz, Esq., of New York.

Bids for Electric Plants.

Bids will be called for within the next 20 days for the Port Clinton, O., Electric Light & Power Co., the electrical heating, hydraulic and sanitary work for the Massillon State Insane Asylum, and the Columbus State Hospital, Columbus, O. E. P. Roberts, M. E., is consulting engineer for all the above work.

Bids for Section Six, Boston Subway.

We have received through the courtesy of the Boston Transit Commission the bids submitted for building section six of the Boston subway, and which are given in detail in the accompanying table. Messrs. R. A. Malone & Co. were awarded the contract on May 7.

Texas Pacific at Somerset, Ky., was burned down on May 7. There were 17 locomotives in the fire.

The new passenger steamer City of Buffalo, belonging to the Cleveland & Buffalo line, will make its first trip this week, carrying an excursion from Cleveland to Buffalo.

At Millville, Mass., on the night of May 9 two wooden railroad bridges, close together, one on the New England road and one on the Worcester Division of the New Haven, were destroyed by fire.

Ohio papers report that the free bicycle law recently passed in that state is a dead letter. The bill simply declares bicycles to be baggage, but there is no law in the state forbidding railroads to charge for carrying baggage.

Mr. E. H. Beckley, formerly General Passenger Agent of the Cincinnati, Wabash & Michigan, has begun legal proceedings against the Pullman and the Wagner sleeping car companies for infringement of his patent on vestibules.

At present the signs forbidding smoking on the elevated railroad platforms serve no good purpose whatever. If only they were roughened with a coating of sand they would be useful for smokers to strike matches on.—*New York Tribune.*

The officers of the Grand Trunk are considering plans for the enlargement of their freight terminals at Portland, Me., and the newspapers of that city report that the road has practically decided to build a large grain elevator, provided the harbor is made fit for the largest vessels.

BIDS FOR SECTION SIX OF THE BOSTON SUBWAY.

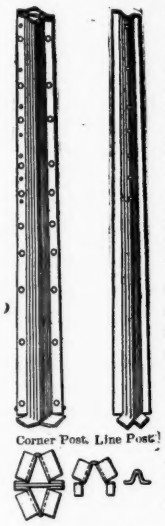
Bidders and addresses.	28,000 cu. yds. earth excavation.	125 tons steel and iron work. Setting and securing.	100 cu. yds. brick masonry. Am. cement.	2,600 cu. yds. brick masonry. Port. cement.	8,100 cu. yds. concrete masonry. Port. cement.	Totals.
Metropolitan Con. Co., Boston, Mass	At $11.50	At $10.00	At $13.75	At $16.50	At $9.50	$414,475
Steward & McDermott, New York	" 8.00	" 15.00	" 15.00	" 16.50	" 9.00	343,175
Grace & Hyde Co., Chicago, Ill	" 7.75	" 20.00	" 14.00	" 16.00	" 9.50	339,450
Frederick E. Shaw, Providence, R. I	" 7.45	" 20.00	" 14.00	" 18.00	" 9.00	332,200
Blagen & Bush, Boston, Mass.	" 6.00	" 20.00	" 16.00	" 17.00	" 11.50	309,450
Wilmarth, Haskin & Murphy, Boston, Mass	" 6.00	" 15.00	" 14.50	" 16.00	" 9.50	289.875
E. W. Everson, Providence, R. I	" 5.60	" 15.00	" 15.00	" 18.00	" 10.00	287 975
Shailer Schniglau Co., Chicago, Ill	" 4.50	" 12.00	" 15.50	" 15.50	" 8.25	236,175
Jones & Meehan, Jamaica Pl., Boston, Mass	" 3.75	" 8.00	" 15.00	" 16.00	" 9.00	222,000
R. A. Malone & Co., Boston, Mass	" 3.75	" 12.00	" 13.00	" 15.00	" 8.00	211,600

The Nicaragua Canal.

The House Committee on Interstate and Foreign Commerce has agreed, by a vote of seven to four, to report favorably the Nicaragua Canal Bill. The gentlemen voting against the report were Messrs. Patterson, of Tennessee; Bartlett, of New York; Corliss, of Michigan, and Hepburn, of Iowa. Mr. Patterson has said that he would file a minority report. Mr. Sherman, the Chairman of the Sub-Committee, which has had special charge of the Canal bill, is said to have stated that the bill cannot be reported for some days yet.

The Bond Steel Fence Posts.

The Bond Steel Fence Post Co., of Adrian, Mich., is manufacturing steel fence posts, the principal forms of which are shown in the cut. The posts are 7 ft. 6 in. long, pressed cold from Bessemer steel plate and made in different sizes and weights, according to the place in which they are to be used. The corner posts weigh 72 lbs. and the line posts 18 lbs. Light posts and stays are also made for braces between the main line posts. These, it will be noticed, are V-shaped in cross section with the edges turned outward In the point of the V there are cut as many notches as there are to be wires to the fence, and in putting it up the wires are set in these notches and a nail slipped in the space between the edge of the post and the wire, thus securing it. The corner post is made of two pieces, similar to the line post, riveted together with a plate between them. Where necessary, the posts are stiffened by bracing, either over or underground, as may be desired.



THE SCRAP HEAP.

Notes.

The Topeka *Capital* says that the Chicago, Rock Island & Pacific has put collectors on six of its passenger trains.

The Vulcan Iron Works at San Francisco were destroyed by fire on May 10. The loss is estimated at $100,000 with $31,000 insurance.

The Chicago, Milwaukee & St. Paul is putting in its baggage cars overhead rods carrying rubber-covered hooks on which bicycles can be hung.

The roundhouse of the Cincinnati, New Orleans &

At St. Louis on May 10 there was a meeting of railroad brotherhoods in which it is said that an agreement was reached to unite six brotherhoods in a general council. The strongest brotherhood, the Engineers, and the most disreputable one, the American Railway Union, appear not to be in the arrangement.

At certain small stations on the Cleveland, Cincinnati, Chicago & St. Louis, where the agents are paid partly by commission, the salaries have lately been reduced, and the rate of commission increased. The officers of the road say that this means an increase of pay, but some of the agents say it means a decrease.

John W. Hildreth, one of the 18-year-old boys who wrecked a fast mail train on the New York Central near Rome, N. Y., last November, was sentenced on May 8, at Syracuse, to imprisonment for life. Hibbard and Plato then pleaded guilty to manslaughter in the first degree and were sentenced to 40 years each. The fourth member of the gang died several weeks ago.

The Chicago & Northwestern Railroad has protested against the ordinance for the elevation of the tracks on Rockwell street, Chicago. President Hughitt says that the company had not been consulted in any way concerning the provisions to be made in the ordinance, and that some of the requirements to be exacted of the company are completely out of the question. He says that the company will not accept the ordinance, and will not comply with it until it is changed.

H. A. Judd and J. B. Watkins, officers of a milling company at Kansas City, have been indicted by a grand jury for giving false weights to a freight agent. The Western Railway Weighing Association made an arrangement with this company to accept its weights, permission being given to inspect the invoice books of the shippers; but within a few months it was found that certain cars were underbilled and now it is alleged that the shippers had a false invoice book which was kept on purpose to deceive and defraud the railroads.

Iron Ore Notes.

The demand for tonnage for iron ore is far greater than was expected and the rates made at the opening of navigation three weeks ago have advanced about 10 cents. It is now estimated that not less than 5,000,000 tons of ore has been sold in the past month at a consideration of about $22,000,000. The Carnegie companies have in the week just passed taken nearly 1,500,000 tons at the fixed prices, much of it, however, being from mines in which the buyers are the chief stockholders.

Lake Notes.

The April report of the Sault Ste. Marie Canal shows business to have been much greater than during the same month last year, indeed, the month has exceeded all records for April. Total tonnage passed was 279,174, against 13,898 the preceding year and 195,505 in 1894. Of the total iron was 79,310 tons, coal 82,664, flour 26,900, and other commodities lesser amounts. The Canadian Canal has not yet been opened, and there has been a very serious blockade of vessels at the American Canal. The Canadian Lock is expected to be ready for business late in May.

In the 24 hours ending with Saturday night last there were 54 arrivals of freight ships at the head of the lake—Duluth, Superior and Two Harbors—they being valued at about $9,200,000, and with a carrying capacity for over 140,000 tons of freight. This shows to what an important point the lake marine has arrived.

Saturday the 400-ft. steel ships, Sir Henry Bessemer and Queen City, and barge 137 were launched on the lakes, the former two at Cleveland and the last at Superior. They add 12,000 to 18,000 tons to the available fleet, according to the depth of water, and are valued at $620,000.

Three whalebacks, one steamer and two barges left the Atlantic this week for the lakes, and will be in commission in June. The use of whaleback vessels on the ocean will be discontinued.

One elevator at Duluth shipped last Saturday 451,000 bushels of grain. In one hour 56,000 bushels were loaded out, this, however, not equaling the record made some years ago, when 80,000 bushels were loaded out by elevator E, Duluth.

The largest cargo ever taken on the lakes was carried out of Escanaba last week on the new steel 432-ft. ship Coralia, being 4,860 net tons. The vessel drew 15 ft., and with enough water to load her to full depth, could have taken 7,500 tons. This cargo has been watched with interest as it has some bearing on the work of the new class of vessels building at lake yards this winter. At the present rates of 70 cents per gross ton, this cargo was worth $3,010, and would take about four days, including all delays.

Meeting of the General Electric Company.

At the annual meeting of the stockholders of the General Electric Co., held at Schenectady, N. Y., on May 12, the following Board of Directors for the ensuing year was elected: Oliver Ames, Jr., Jefferson Coolidge, Jr., C. B. Coster, Thomas A. Edison, Eugene Griffin, Gordon Abbott, F. S. Hastings, H. L. Higginson, G. P. Gardner, J. Pierpont Morgan, Robert T. Paine, Jr., C. A. Coffin, George F. Peabody. The latter takes the place of Thos. K. Cummins, Jr.

A Chance to Turn a Dishonest Penny.

Wilber W. Marmaduke, of Washington, D. C., First Vice-President of the Guarantee Ticket Brokers' Association, may be an enterprising scalper, but he lacks discretion. He is mailing proposals for editorial mileage to the editors of various newspapers about the country. One has been received at this office. In it Mr Marmaduke sets forth his reliability, likewise his discretion in handling such delicate matters. His rate-sheet includes both mileage prices and his compensation for editorial trip tickets. If his figures are not as high as the other fellows', editors are invited to write him about the matter. We trust that Mr. Marmaduke will not feel pained over this public acknowledgement of his communication.—*Buffalo Express.*

Canadian Steamship Line to Europe.

The negotiations for the establishment of a line of fast steamships between Canada and England, which have been pending for many months, have at last proceeded so far that bids for the establishment of a line by May 1, 1898, have been advertised for in London. The Canadian Government offers a subsidy of $750,000, and it is expected that the British Government will pay $375,000 a year. The advertisement calls for a speed of 20 knots an hour, which will necessitate the use of vessels capable of a maximum speed of about 21½ knots. They must have a displacement of 8,500 tons each. They must have equipment equal to that of the Teutonic; accommodations for 275 first class, 200 second class and 1,000 emigrant passengers and suitable and sufficient cold storage rooms. In winter the vessels must land in Halifax, to leave the mails, but may then go on to St. John, N. B. In summer they must leave the mails at Quebec, but then may go to Montreal.

Coastwise Transportation.

The statistics of steam and sailing vessels engaged in commerce on the Atlantic coast and the Gulf of Mexico, which are contained in the Eleventh Census, have been published, and the New York *Journal of Commerce* prints copious extracts from the volume. The total number of vessels on these waters, including navigable rivers, except the Mississippi, in the year 1889, was 13,406, with an aggregate tonnage of 2,862,630, and a total value of $127,676,487. Some of the statistics are:

	Number.	Valuation.
Steamers (total)	2,933	$73,554,540
Steamers carrying passengers and freight	810	36,989,780
Steamers, ferry	214	7,967,700
Yachts, steam	170	3,520,614
Other steamers	1,739	25,076,446
Sailing vessels (total)	7,108	46,284,567
Yachts, sailing	628	2,681,425
Other sailing vessels	1,251	35,795,702
Unrigged craft	3,425	7,837,440
Total tonnage, steam craft		837,162
Total tonnage, sailing vessels		1,401,985
Freight carried, 1889, tons		52,712,124
Gross earnings, 1889		90,147,632
Operating expenses		70 226.792
Net earnings		19,920,840

Comparing these returns with the numbers of the vessels engaged, it is found that 810 steamers earned, net, $7,036,818, comparing with net earnings of $8,279,323 for 5,229 sailing vessels, which at first sight appears highly favorable to the steam craft; but if the respective valuations be referred to, it is seen that the percentage of net income upon capital invested does not differ materially in the case of steamers as compared with sailing vessels, the advantage in fact being with the latter. This is illustrated by the following figures:

	Net earnings.	Valuation.
Steamers	$7,036,818	$36,989,280
Sailing vessels	8,279,323	38,777,627

Of the 6,525 sailing vessels reported, 6,356 were owned by individuals. The construction of the vessels included in the report was as follows:

	Wood.	Composite.	Iron and steel.
Steamers	2,448	24	461
Sailing vessels	7,029	66	13
Total	9,477	90	474

The average tonnage of wooden steamers was 175, and of iron steam vessels 877. In sailing vessels the average tonnage was 195 for wooden and 709 for iron. Of the 52 million tons of freight transported during one year 14 million tons was coal.

South American Notes.

Arrangements for building the Neuquen extension of the Buenos Ayres Great Southern Railroad are being rapidly pushed forward.

Complaints are being made of an insufficient number of passenger cars for suburban traffic on the Central Railway of Brazil, leading out from Rio de Janeiro. The Minister of Industry is said to favor the building of an elevated railroad to relieve the rush of suburban travel.

The Sao Paulo (Brazilian) Railroad, 86½ miles in length, reports gross earnings for six months, from June 31 to December 31, 1895, as being 9,945,353 mil reis, being an increase over the receipts for the corresponding period of 1894 of 343,805 mil reis. The net earnings remitted to London for the half year amounted to $1,111,730. The company has surveyed two new alternative routes across the mountains to Sao Paulo, one with grades under 3 per cent., the other with cable inclines for surmounting the Serra. Plans have been submitted to the government.

The Alagoas (Brazilian) Railroad also announces an increase of 3.6 per cent. in receipts, the net earnings amounting to $12,410.

The effect of a cable to the city of Manáos, Brazil (1,000 miles up the Amazon), is apparent from the fact that whereas formerly only a small fraction of the Amazonian rubber shipments was made from that point direct to the United States and Europe, the exports for February last were 3,443 tons as against 1,846 tons from its rival port Pará, at the mouth of the river. The city of Manáos will shortly be lighted by electricity, a company having been formed for this purpose with Robert D. Evans, President; Charles R. Flint, Treasurer, and Alfred D. Bugs, Secretary.

An important discovery of a series of gold-bearing rocks in Paraguay has started a gold excitement in the La Plata countries.

Electric Power from the Montmorency Falls.

The Montmorency Electric Power Co., of Quebec, has recently completed a well-equipped electric plant, the power for which is obtained from the Montmorency Falls. These have a fall of over 275 ft., and being only 8 miles from Quebec, where the electricity is used, they afford an exceptionally good and convenient power. The company built a dam several years ago across the narrow gorge of the Montmorency River 1,500 ft. above the falls, and a small cotton mill was built to utilize the power. Shortly after a small arc station was erected for doing lighting in Quebec, and in 1888 an incandescent plant of about 100 H. P. capacity was added to this. In 1894 the capacity of the old dam was increased to furnish 12,000 H. P., and a short tunnel was run through the rock connecting the dam with a wooden flume. This extends about 1,500 ft. along the edge of the bluffs and is connected with a steel tube 72 in. in diameter which carries the water to the power house. The turbines, which were made by J. C. Rowson, of Picton, Ont., have a capacity of 700 H. P. each, and are only 21 in. in diameter. There are three 600 k. w. generators of the Stanley-Kelly-Chesney inductor type of two-phase machines. They are said to be the largest inductor machines that have ever been built and the only practical ones that have ever been constructed for an initial electric motor force of 5,700 volts. The electricity is transmitted by three overhead lines with a total capacity of 1,500 k. w. to the company's sub-station at Quebec where it furnishes light and power.

Testing Armor Plates.

Last week a test was made at Redington, Pa., by the Bethlehem Iron Co. of one of the 15-in. armor plates intended for the turret of the battle-ship Iowa. The plate fired at was 17 ft. long, 9 ft. wide and 15 in. thick. It weighed about 41 tons, and is the largest plate ever subjected to actual test. A Carpenter projectile, weighing 500 lbs., was fired from a 10-in. gun with a charge of 154 lbs. of powder, giving it a velocity of 1,539 ft. per second. The point of impact was a little to the left and below the center of the plate. The projectile was shattered and the point imbedded in the plate. The plate was split across its width about 18 in. away from the point of impact. The result was not entirely unexpected as flaws had been observed in one end, but the company had confidence that the plate would stand the test. The cracking of the plate was due to the opening of these internal flaws. The company will present another plate to be tested.

CAR BUILDING.

The Lehigh Valley road is reported to be in the market for 5,000 cars, 3,000 coal and the other 2,000 box.

The Columbus shops of the Panhandle have received orders for 60 flat cars and five combination smoking and baggage cars.

The Burlington, Cedar Rapids & Northern, according to the annual report just issued, will purchase during the coming year 200 stock cars, three first-class passenger locomotives and four switching engines.

The Aberdeen & West End road, owned by A. F. Page, of Aberdeen, N. C., is in the market for passenger coaches and baggage and express cars for two additional trains and for a few freight cars and two locomotives.

The Rodger Ballast Car Co. has shipped the first 100 cars on an order for 400 from the Great Northern. These cars are a combination ballast, ore and coal care. Their capacity for ballast is 20 cu. yds., for ore 30 tons and for coal 27 to 30 tons. They are for use on the Montana Central, hauling copper ore from Butte to the reduction works at Great Falls, 170 miles, and will be loaded with coal on the return trips to Butte and Anaconda. These cars were built at the Wells & French Co.'s Works, in Chicago, and shipped to the Whitebreast Fuel Co.'s mines at Ladd, Ill., to be loaded with coal for St. Paul, thus saving mileage from Chicago to St. Paul.

The Baltimore & Ohio car order for 5,000 cars has been divided between six companies, the awards having been announced on Monday last. The contracts are for 1,800 single-hopper coal cars, 1,800 box cars, 36 ft. long; 1,000 coke cars and 400 double-hopper coal cars. The awards were as follows: South Baltimore Car Works, Baltimore, 1,000 coke cars; Pullman Palace Car Company, Chicago, 1,000 single-hopper coal cars; Missouri Car & Foundry Co., St. Louis, 500 box cars and 400 double-hopper coal cars; Michigan Peninsular Car Co., Detroit, 800 single-hopper coal cars; Barney & Smith Co., Dayton, O., 800 box cars; Mount Vernon Car Mfg. Co., Mount Vernon, Ill., 500 box cars. Payment for the cars will be made from the proceeds of an issue of car-trust certificates by the receivers amounting to $3,400,000. All the cars will be equipped with automatic couplers, air-brakes, and iron brake beams.

BRIDGE BUILDING.

Allegheny, Pa.—Plans have been prepared for a new bridge over Woods Run.

Boonville, Mo.—The bill authorizing the Boonville & Howard County Bridge Co. to build a bridge across the Missouri River at Boonville has been favorably reported by the House Committee at Washington.

Buffalo, N. Y.—The contract for the substructure for the Porter avenue bridge was awarded last week to the Buffalo Dredging Co. for $19,497.75, and the contract for the superstructure to the Buffalo Bridge & Iron Works for $51,500.

Burlington, Ia.—The council has passed an ordinance to build a 400-ft bridge with a 20-ft. roadway and two 6-ft. sidewalks. The estimated cost of the superstructure is $20,000 and of the substructure $6,500.

Detroit, Mich.—The Detroit Bridge bill providing for a bridge across the Detroit River will not be considered till the next session of Congress.

Edes Falls, Me.—A covered wooden bridge is to be built here.

Fort Madison, Ia.—Bids will be received until June 2 for the construction of all iron and combination bridges for the year. Address the Chairman of the Board of Supervisors, or J. Rose Robertson, County Engineer, Fort Madison, Ia.

Freemansburg, Pa.—The contract for building the bridge over the Lehigh River has been awarded to Pascoe & Crilley, of Allentown, Pa., for $30,375. The bridge will be of two 183-ft. 9-in. spans with a 20-ft. roadway and two 5-ft. sidewalks.

Freeport, Pa.—Major Hoxie, United States Engineer, has approved the plans for the bridge over the Allegheny. The bridge will have three 320-ft. spans and will be 45 ft. above low water.

Grafton, Ill.—The bill allowing the St. Louis, Perry & Chicago Railroad Co. to build a drawbridge over the Illinois River has been passed by the House.

Green River, Wyo.—The Commissioners of Sweetwater County have advertised for a bridge to be built over the Green River.

Greenville, N. C.—The Pitt County authorities will soon erect a new iron and steel bridge across the Pamlico river near Greenville, to take the place of the present wooden structure. It will be over 1,500 feet long, with stone abutments, etc., of 100 ft. at each end. Address Secretary, County Commission, Greenville, N. C.

Harrodsburg, Ky.—Bids were received for building a steel bridge across the Chaplin River as follows: Lafayette Bridge Co., Lafayette, Ind., $410 (awarded); Groton Bridge Co., Groton, N. Y., $457; Brackett Bridge Co., Cincinnati, O., $477; Cincinnati Bridge Co., $447; Canton Bridge Co., Canton, O., $520; Toledo Bridge Co., $600; J. H. Baldwin, Harrodsburg, $525.

Iowa City, Ia.—Bids will be received till May 28 by the county auditor for building a 600-ft. bridge over Cedar River and a 300-ft. one over the Iowa River. Cylinder piers will be used for both bridges.

Johnstown, N. Y.—The Havana Bridge Co., of Montour Falls, N. Y., has been awarded the contract for two steel I-beam bridges of 30 ft. span.

Macon, Ga.—Bids will be received until May 29 by the Commissioners of Bibb County for building an iron bridge across the Ocmulgee River. The bridge will be of two spans of 170 ft. each with two viaducts of 60 ft. each. The contractor will be required to give bonds in double the amount of his bid, with securities for the faithful performance of the contract. W. G. Smith is Clerk.

Medina, N. Y.—The Legislature has made an appropriation of $5,000 for replacing the bridge over Oak Orchard Creek with a wrought iron steel or stone structure.

Milwaukee, Wis.—Bids will be received until May 21 for the substructure and superstructure of a rolling lift bridge with two side spans across the Milwaukee River. G. H. Denzenberg, C. E., is Chairman of the Board of Public Works Commission.

Minneapolis, Minn.—Bids will be received till May 22 for building a bridge at Seventh street over the Great Northern and other railroad tracks. F. W. Cappelen is city engineer.

New Haven, Conn.—The contract for the substructure for the new Quinnipiac River drawbridge has been awarded to James J. Geary, representing the Beattie Granite Co., of Stony Creek, Conn., for $63,180.20.

New York.—Mayor Strong has approved the bills for building a bridge over the Mott Haven Canal at 135th street, at an estimated cost of $30,000, one ever the Bronx River at Westchester avenue at an estimated cost of $100,000, and one over the Port Morris branch of the N. Y., N. H. & H. R. R., at 150th street and Brook avenue.

The Commissioners of the New York & New Jersey Bridge have ordered plans to be made for an approach to the proposed bridge at Sixtieth street, to extend along Twelfth and Thirteenth avenues and West street to Pier No. 1, so that freight can be loaded directly to the vessels from the cars.

Niagara Falls, N. Y.—Work has been begun on the foundations for the abutments of the new steel arch to replace the old suspension bridge. A description of this bridge was given in our issue of April 24.

Norristown, Pa.—The County Commissioners will soon advertise for bids for building a three-span iron bridge about 400 ft. long over the Stony Creek Railroad and Stony Creek at Airy street.

Oakland, Cal.—The Eighth Street bridge has been declared unsafe and it will probably be closed. There are no funds available for repairs and the council is undecided what to do.

Palatka, Fla.—It is said that the plant lines will build a new bridge over the Ochlawha River.

Paterson, N. J.—The following bids were received May 12 by the committee for the construction of a Melan arch bridge over the Passaic River at the foot of West street and Hamburg avenue: Frank S. Long, New York, $58,900; Sharpe & Ferguson, Paterson, N. J., $43,400; Wilson & Bailey Manufacturing Co., Brooklyn, $50,000; Dean & Westbrooke, New York, $52,000; Clark & Co., New York, $50,475; Steward & McDermott, New York, $46,750. The committee recommended that the contract be awarded to Sharpe & Ferguson.

The Bridge Committee has decided that the Delaware, Lackawanna & Western Railroad must build a bridge at Sussex street.

The following bids were received for a Melan arch culvert on the Pompton and Newark Turnpike, near Mountain View: Richard Stanley, Paterson, N. J., $1,040; Clark & Co., New York, N. Y., $845; Russell & Jacobus, Paterson, N. J., $1,076; A. L. Terwilleger, Paterson, N. J., $730; Joseph Sharpe, Paterson, N. J., $875. The contract was awarded to Clarke & Co.

Philadelphia.—Ordinances have been introduced in the Common Council providing for a new bridge at Lehigh avenue over the Philadelphia & Trenton railroad; one across the Wissahickon Creek, near Southampton avenue, and one at Erie avenue, over the Richmond branch of the P. & R.

Phœnixville, Pa.—Bids for the reconstruction of iron bridge over Wissahickon Creek have been received as follows: Wm. H. H. Achuff, Philadelphia, $2,800; Benner & Opodyke, Philadelphia, $2,063; Thomas C. Cooper, Philadelphia, $2,130; J. H. Hatnaway & Co., Philadelphia, $3,200; Schuylkill Bridge Works, Phœnixville, Pa., $2,070.

Pittsburgh, Pa.—The plans for the bridge over the Monongahela River at Ferry street have been approved. E. K. Morse is engineer.

Salem, Mass.—Bids will be received by the Commissioners of Essex County till May 25 for building a drawbridge upon plans furnished by each bidder. Further information may be obtained from Charles A. Putnam, C. E., 251 Essex street, Salem, Mass.

Sharon, Pa.—The County Commissioners have decided to erect nine single-span bridges in the county during the summer. Most of them will replace wooden structures.

Topeka, Kan.—Judge Hazen has refused to grant the injunction to prevent the issue of bonds for building the Melan Bridge across the Kansas River. Those wishing the injunction claim that, as the Melan system is patented, the construction of the bridge would not be open to competition and that the Commissioners do not have the right to issue bonds conferring corporate powers.

Trenton, N. J.—Bids were received as follows for the bridge at Eight Mile Run: New Jersey Steel & Iron Co., Trenton, N. J., $1,955; Frank R. Long, 253 Broadway, New York, $1,999; Wrought Iron Bridge Co., Canton, O., $2,095; Clark & Co., 100 Broadway, New York, $2,130; Berlin Iron Bridge Co, East Berlin, Conn., $2,600; King Bridge Co., Cleveland, O., $2,075. Bids for a concrete bridge were submitted by William F. McGovern, of Newton, N. J., for $3,780; Clark & Co., $3,600, and Frank R. Long, $3,625.

MEETINGS AND ANNOUNCEMENTS.

Dividends.

Dividends on the capital stocks of railroad companies have been declared as follows:

Chicago & Alton, quarterly, 2 per cent. on the common and preferred stock, payable June 1.
Cleveland & Pittsburgh, quarterly, 1¾ per cent., guaranteed, payable June 1.
Pennsylvania, 2½ per cent., payable May 29.

Stockholders' Meetings.

Meetings of the stockholders of railroad companies will be held as follows:

Boonville Railroad Bridge Co., annual, company's office St. Louis, Mo., May 16.
Burlington, Cedar Rapids & Northern, annual, Cedar Rapids, Ia., May 26.
Calgary & Edmonton, special, Windsor Hotel, Montreal, Que., June 10.
Canada Southern, annual, St. Thomas, Ont., June 5.
Chicago & North Western, annual, company's office, Chicago, June 4.
Chicago, St. Paul, Minneapolis & Omaha, annual, company's office, Hudson, Wis., June 8.
Chicago, Burlington & Kansas City, annual, company's office, Burlington, Ia., May 20.
Des Moines & Fort Dodge, annual, company's office, Des Moines, Ia., June 4.
Duluth, South Shore & Atlantic, annual, company's office, Marquette, Mich., June 4.
Flint & Pere Marquette, annual, Saginaw, Mich., May 20.
Keokuk & Des Moines, annual, company's office, Des Moines, Ia., June 3.
Manchester & Lawrence, annual, Amoskeag National Bank, Manchester, N. H., May 29.
Michigan Midland & Canada, annual, Michigan Central office, Detroit, Mich., June 4.
Milner Coal & Railroad Co., annual, company's office, Newcastle, Ala., May 20.
Missouri, Kansas City & Texas, annual, Parsons, Kan., May 20.
Missouri, Kansas & Eastern, annual, company's office, St. Louis, Mo., May 16.
Missouri, Kansas & Texas, annual, company's office, Parsons, Kan., May 20.
New York & Harlem, annual, company's office, Grand Central Station, New York City, May 19.
Northern, annual, Phœnix Hall, Concord, N. H., May 28.
Pittsburgh, Fort Wayne & Chicago, annual, company's office, Pittsburgh, Pa., May 20.
St. Louis & Kansas City, annual, company's office, St. Louis, Mo., May 16.

Technical Meetings.

Meetings and conventions of railroad associations and technical societies will be held as follows:

The *American Society of Civil Engineers* will hold its annual convention at San Francisco, beginning on or about June 30.

The *American Society of Mechanical Engineers* will hold its annual convention at the Southern Hotel, St. Louis, May 19 to 22. The programme of the meeting was published in the *Railroad Gazette* of April 24.

The *Traveling Engineers' Association* will hold its next annual meeting at Minneapolis, Minn., commencing Sept. 8.

The *Master Car Builders' Association* will hold its next convention at Congress Hall, Saratoga Springs, N. Y., beginning June 17. The rates at Congress Hall are $3 a day for single rooms.

The *Master Mechanics' Association* will hold its next annual convention at Congress Hall, Saratoga Springs, beginning June 22.

The *Roadmasters' Association of America* will hold its next annual convention at Niagara Falls, beginning on Sept. 8.

The *Railway Signalling Club* will meet on the second Tuesday of the months of January, March, May, September and November, in Chicago. Mr. George M. Basford, is secretary, The Rookery, Chicago.

The *Western Railway Club* meets in Chicago on the third Tuesday of each month, at 2 p. m.

The *New York Railroad Club* meets at the rooms of the American Society of Mechanical Engineers, 12 West

Thirty-first street, New York City, on the third Thursday in each month, at 8 p. m.

The *New England Railroad Club* meets at Wesleyan Hall, Bromfield street, Boston, Mass., on the second Tuesday of each month.

The *Central Railway Club* meets at the Hotel Iroquois, Buffalo, N. Y., on the second Friday of January, March May, September and November, at 2 p. m.

The *Southern and Southwestern Railway Club* meets at the Kimball House, Atlanta, Ga., on the third Thursday in January, April, August and November.

The *Northwestern Railroad Club* meets at the Ryan Hotel, St. Paul, on the second Tuesday of each month, at 8 p. m.

The *Northwestern Track and Bridge Association* meets at the St. Paul Union Station on the Friday following the second Wednesday of March, June, September and December, at 2.30 p. m.

The *American Society of Civil Engineers* meets at the House of the Society, 127 East Twenty-third street, New York, on the first and third Wednesdays in each month, at 8 p. m.

The *Western Society of Engineers* meets on the first Tuesday in each month, at 8 p. m. The headquarters of the society are at 1736–1739 Monadnock Block, Chicago. The business meetings are held on the first Wednesday at its rooms. The meetings for the reading and discussion of papers are held on the third Wednesday at the Armour Institute, Thirty-third street and Armour avenue.

The *Engineers' Club of Philadelphia* meets at the House of the Club, 1122 Girard street, Philadelphia, on the first and third Saturdays of each month, at 8 p. m.

The *Boston Society of Civil Engineers* meets at 715 Tremont Temple, Boston, on the third Wednesday in each month, at 7:30 p. m.

The *Engineers' Club of St. Louis* meets in the Missouri Historical Society Building, corner Sixteenth street and Lucas place, St. Louis, on the first and third Wednesdays in each month.

The *Engineering Association of the South* meets on the second Thursday in each month, at 8 p. m. The Association headquarters are at The Cumberland Publishing House, Nashville, Tenn.

The *Engineers' Society of Western Pennsylvania* meets in the Carnegie Library Building, Allegheny, Pa., on the third Tuesday in each month, at 7.30 p. m.

The *Technical Society of the Pacific Coast* meets at its rooms in the Academy of Sciences Building, 819 Market street, San Francisco, Cal., on the first Friday in each month, at 8 p. m.

The *Association of Engineers of Virginia* holds informal meetings on the third Wednesday of each month, from September to May, inclusive, at 710 Terry Building, Roanoke, at - p. m.

The *Denver Society of Civil Engineers* meets at 36 Jacobson Block, Denver, Col., on the second Tuesday of each month except during July and August.

The *Montana Society of Civil Engineers* meets at Helena, Mont., on the third Saturday in each month, at 7.30 p. m.

The *Engineers' Club of Minneapolis* meets in the Public Library Building, Minneapolis, Minn., on the first Thursday in each month.

The *Canadian Society of Civil Engineers* meets at its rooms, 112 Mansfield street, Montreal, P. Q., every alternate Thursday, at 8 p. m.

The *Civil Engineers' Club of Cleveland* meets in the Case Library Building, Cleveland, O., on the second Tuesday in each month, at 8 p. m. Semi-monthly meetings are held on the fourth Tuesday of each month.

The *Engineers' Club of Cincinnati* meets at the rooms of the Literary Club, No. 24 West Fourth street, Cincinnati, O., on the third Thursday in each month, at 7.30 p. m. Address P. O. Box 333.

The *Engineers' and Architects' Club of Louisville* meets in the Norton Building, Fourth avenue and Jefferson street, on the second Thursday each month at 8 p. m.

The *Western Foundrymen's Association* meets in the Great Northern Hotel, Chicago, on the third Wednesday of each month. S. T. Johnston, Monadnock Block, Chicago, is secretary of the association.

The *Engineers' Club of Columbus, (O.)*, meets at 12½ North High street, on the first and third Saturdays from September to June.

The *Engineers' and Architects' Association of Southern California* meets each third Wednesday of the month in the Hall of the Chamber of Commerce, Los Angeles, Cal.

The *Engineers' Society of Western New York* holds regular meetings the first Monday in each month, except in the months of July and August, at the Buffalo Library Building.

The *Civil Engineers' Society of St. Paul* meets on the first Monday of each month, except June July, August and September.

The *Engineers' Society of Western New York* meets on the first Monday of each month at the Society's rooms in the Buffalo Library.

Civil Engineers Club of St. Paul.

A regular meeting of the Civil Engineers' Society of St. Paul was held on May 4, 13 members and 6 visitors present and Mr. W. L. Darling in the chair. Mr. William de la Barre, of Minneapolis, read a paper on "Recent Improvements of the Water Power at St. Anthony Falls."

Freight Claim Association.

The annual convention of the Freight Claim Association was held in Chicago May 6 and 7. The following officers were elected: President, G. C. Arnold, St. Louis Southwestern; Vice-President, John Nichol, Lehigh Valley; Second Vice-President, L. F. Moore, Chicago, Burlington & Quincy; Secretary, S. A. Mehorter, Pennsylvania Railroad.

Master Car Builders' Association.

The Committee on Subjects for the 1897 convention requests from members of the association a list of one or more subjects, which will, in their opinion, be desirable for committee work during the coming year. The committee also asks for suggestions of subjects for topical discussions for the noon hours during the 1896 convention. Please send replies to A. M. Waitt, Gen. M. C. B. Lake Shore & Michigan Southern, Cleveland, O., not later than June 1.

Engineers' Club of St. Louis.

The club met May 6 at 1600 Lucas place, President Ockerson presiding and 21 members and two visitors present.

By request Professor Johnson read an abstract of Mr. J. W. Woermann's paper on "The Construction of a Low Crib Dam Across Rock River." The paper was illustrated by numerous photographs and blue prints. This dam is one of the structures of the Illinois & Mississippi Canal, known as the "Hennepin Canal," and is intended to furnish slack water navigation in Rock River above the lower rapids. The exact location, design, methods of construction, foundations, material used, and the cost of the work, were fully given, together with a statement of the force employed and the time required to do the work.

Prof. J. H. Kinealy described a form of planimeter which could be made of a single piece of wire, showing the methods of operating it, and principles upon which it was based. Under certain limited conditions of service, and if used with great skill, quite accurate results were possible. After considerable investigation and study Professor Kinealy had worked out the mathematical theory of the instrument. The discussion was participated in by Messrs. Harrington, Dunaway, Ockerson, Baier and Freeman.

Central Railway Club.

The Central Railway Club held a regular meeting at the Iroquois Hotel, Buffalo, on May 9, with President Bronner in the chair.

The committee on "Car Roofs," through its chairman, E. A. Miller, asked for further time in which to present a report.

The report of the committee on "Tool Rooms in Machine Shops and Best Methods of Handling Them," was presented by Samuel Higgins.

The first subject taken up for discussion was the report of the committee on "Air-Brake Testing and Inspecting Plants," presented at the last meeting. Mr. Higgins stated that the Lehigh Valley is replacing pumps with air compressors for the purpose of taking care of the brakes on cars of other roads as well as its own. The compressors were utilized for several purposes where air is employed and were more desirable than pumps. In Mr. Higgins' opinion, a road that is without a testing and inspection plant should get one.

Mr. McCarty, for the committee, said that it had reported in favor of pumps from an economical point of view as well as on the ground of sufficiency and satisfaction. A compressor will cost $600 where the expense of pumps for the same service will not be more than $100. At the same time, where a company is able to buy the compressor, it is the more desirable device.

Mr. Higgins thought that the price named for a compressor was high.

Mr. Griffith said that he had used both methods and found the pumps satisfactory. All the air needed had been secured with two pumps connected directly with each other.

Mr. Mackenzie said they had tried compound pumps in the Nickel Plate shops, but not with such a degree of success as was desired. They have since put in a compressor.

Mr. Petrie said that the testing and inspection plant at East Buffalo is a great advantage to the receiving company. A great improvement has been found in cars running between New York and Chicago, but those received from other points and never before inspected, were generally in bad condition.

PERSONAL.

—Mr. George W. Prescott, recently Superintendent of Motive Power of the Vandalia Line, is now at the head of the Novelty Iron Works, at Dixon, Ill.

—Mr. E. P. Huston, of Evansville, Ind., Joint Receiver with Mr. E. O. Hopkins, of the Peoria, Decatur & Evansville road, resigned that position last week.

—Mr. Homer R. Stanford, Assoc. M. of the Am. Soc. C. E., has been appointed Shop Snperintendent of the Pittsburgh Bridge Company in place of Mr. Albert Nichols, deceased.

—Mr. Robert Pitcairn, Division Superintendent and General Agent of the Pennsylvania, at Pittsburgh, celebrated his sixtieth birthday, on May 6, and received a number of appropriate gifts.

—Mr. H. S. Burgesser, recently Division Freight Agent of the West Shore road at Buffalo, N. Y., has been promoted to be Assistant General Freight Agent with headquarters in New York City.

—Mr. R. P. Granger, now Chief Clerk in the Manager's office of the Southern Pacific at Houston, Tex., has been placed in charge of the car service department of the Atlantic lines of that company.

—The Rutland road in Vermont having been separated from the Central Vermont, is now operated by President P. W. Clement and Mr. Henry G. Smith, Superintendent in direct charge of operating details.

—Mr. B. F. Blake has been appointed Assistant General Freight and Passenger Agent of the Plant railroad and steamship lines with office at 131 Devonshire street, Boston. Mr. Blake has heretofore been Contracting Freight Agent of the Plant Lines with office at New York City.

—Mr. E. L. Weisgerber has been appointed Master Mechanic of the Baltimore & Ohio shops at Mt. Clare, Baltimore. He is now Master Mechanic at Newark, O., having been at those shops nearly 23 years. His successor as Master Mechanic there will be Mr. William Harrison, Jr., now General Foreman.

—Mr. P. M. Hammett has been appointed Division Master Mechanic of the Boston & Maine, with office at Boston, and Mr. D. A. Smith has been appointed to a similar office on the Eastern, Western and Northern divisions, with headquarters at Somerville, Mass. Mr. Hammett succeeds Mr. A. B. Barrett, resigned.

—Mr. J. F. Tafe, who has been the London financial agent of the Philadelphia & Reading since the resignation of Mr. Isaac L. Rice, has resigned, and the London offices of the company have been closed. The position was created when Mr. McLeod was President of the company and Mr. Rice was the first incumbent of the office.

—Prof. Harold B. Smith, of Purdue University, Lafayette, Ind., has been elected Director of the School of Electrical Engineering to be established at the Worcester Polytechnic Institute. Professor Smith will organize the department for the coming year. He is a Cornell graduate, class of 1891, and has been in charge of the Department of Physics and Electricity in Purdue for some time.

—Mr. Thomas Seddon, President of the Sloss Iron & Steel Co., of Birmingham, Ala., next to the Tennessee Coal & Iron Co., the largest mining company in the South, died at Birmingham, Ala., on May 10, aged 47 years. Mr. Seddon was long identified with the development of the mineral resources of Northern Alabama, and by his enterprise had not only secured a very large fortune, but had added greatly to the resources of the state.

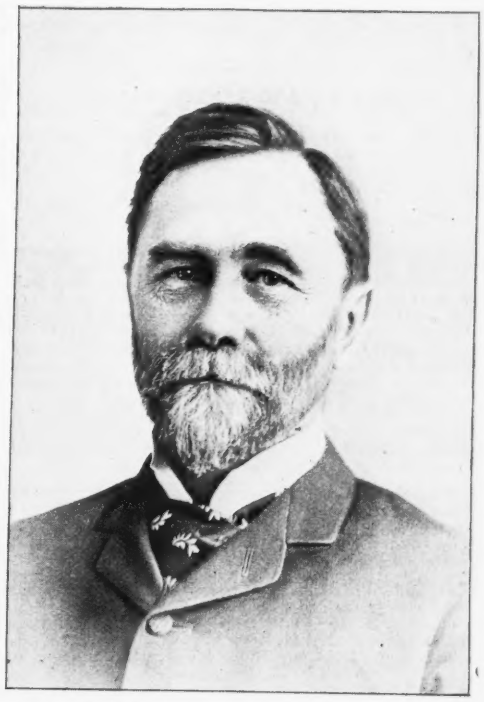
—Mr. Lucas Van Allen, who has been Acting Superintendent of the Buffalo Division of the Lehigh Valley since the resignation of Mr. Charles A. Beach, has been given the full title of Superintendent. Mr. Van Allen was formerly Trainmaster of this division of the Lehigh Valley, holding the office for about four years. Previously he had been with the Erie for about 10 years in a similar capacity. He began his railroad career as a telegraph operator on the Grand Trunk.

—Mr. H. C. Whitehead was elected General Auditor of the Atchison, Topeka & Santa Fe by the Directors at a meeting in New York City last week. Mr. Whitehead is now Auditor of the Southern California road, which is controlled by the Atchison. He has been in the Auditing Department of the Atchison since 1881 and is the senior in length of service of the several auditors on the various lines of the Atchison system. He has also been in the service of the Kansas Pacific, the Michigan Central and the Union Pacific.

—Mr. Henry B. Seaman, M. Am. Soc. C.E., for several years past on the New York, New Haven & Hartford, where he had charge of the important construction work at Mount Vernon, N. Y., and vicinity, has severed his connection with the road and has opened an office as civil and consulting engineer at 40 Wall street, New York City. Mr. Seaman's experience has been varied and extensive, especially in bridge work, and several structures designed by him have appeared in the *Railroad Gazette*. In the Mount Vernon work, involving very costly changes of grade and alignment, negotiations with the municipalities and property owners constituted a considerable part of the work of the engineer in charge, and this led Mr. Seaman to study law, and he has been admitted to practice in the State of New York.

—Mr. William S. Sloan, Second Vice-President of the Delaware, Lackawanna & Western, and a son of Mr. Samuel Sloan, President of the company, died in Connecticut on May 11, after a long illness. Mr. Sloan entered the service of the railroad soon after leaving college, and after a brief service in the general office became Assistant General Freight Agent. He was promoted rapidly and became General Freight Agent and Third Vice-President, being appointed to the latter office in November, 1894. In the latter office he had charge of the company's freight and passenger business. Mr. Sloan was a master of details and he did much valuable, if inconspicuous, work in traffic affairs, not only for his own railroad, but in the various traffic associations of which his company was a member. He was a man of high principle and gave much time and money to various philanthropic and educational associations. He was Chairman for several years of one of the branches of the Young Men's Christian Association of New York City and took a deep interest in the railroad branches of that association established by his company, many of the buildings being erected and sustained through his interest in the work.

—Mr. Franklin Kintzle Hain, Vice-President and General Manager of the Manhattan [Elevated] Railway, was run over and killed by a freight train at Clifton Springs, N. Y., last Saturday. His health had caused much solicitude to his friends for a number of months. For years he had not spared himself, night or day, in the service of his company, and it had been apparent for some time that he was breaking down. Last February



Col. F. K. Hain.

he went South for a little time, and a few weeks ago went to Clifton Springs on the advice of his physician. He appeared to be suffering from what may be conveniently called nervous prostration; that is, from that general impairment of the energies which we so often see as the result of overwork, and especially in the cases of railroad officers of high rank who have passed middle age. Those who saw Colonel Hain often in the last year or two must have observed a certain loss of elasticity, although his mind was still clear and vigorous, and there seemed no reason to believe that he might not be restored to good health by a few months' complete rest and by some relaxation in his future work.

Mr. Hain, or, as he was generally called, "Colonel" Hain, was born July 22, 1836, at Stouchsburg, Berks County, Pa. His ancestors came from Holland in the early part of the eighteenth century. At 16 he went as an apprentice into the shops of the Philadelphia & Reading, and at 21 he entered the naval service as an engineer. He resigned, but went into the service again in May, 1861. He served two years on the Iroquois and participated in several battles. Later he served in the army, and in February, 1863, he left military service and entered the shops of the Delaware, Lackawanna & Western at Scranton, as a draftsman. He served later as Master Mechanic and as Superintendent of Motive Power, Philadelphia and Erie Division, Pennsylvania Railroad, and in 1867 entered the service of the Baldwin Locomotive Works in charge of their designing department. During this time he spent 16 months in Russia for the Baldwins, and from June, 1874, to August, 1876, he was Superintendent of Motive Power of the New

York, Lake Erie & Western, which office he resigned to become General Superintendent on the Keokuk & Des Moines road. He entered the service of the Manhattan Elevated in New York as Master Mechanic, and became General Manager in March, 1880. In November, 1891, he was elected Second Vice-President.

In the death of Colonel Hain the elevated railroad system of New York and the public of New York suffer a great loss. He was a man of extraordinary qualities as a disciplinarian and as an executive officer. The unparalleled record of the elevated system of New York for regularity and safety in the conduct of the heaviest passenger traffic in the world is beyond any doubt very largely the result of Colonel Hain's remorseless devotion of his days and nights, of his health and his pleasure, to the work of this company. His friends knew very well that there was not an hour in the twenty-four that Colonel Hain felt was entirely his own. He was liable to appear in the yards or on the tracks of the Manhattan system at any time in the night, and his influence as the operating chief of that system was felt from the top to the bottom every minute of the day. Of course we are familiar with examples of devotion among railroad men. Those who see much of the life of railroad officers know that Colonel Hain's case was only a slightly exaggerated example of what is going on all the while; but it so happens that the work which he was doing permitted, if it did not require, an unusual persistency of application, and this is what killed him.

Colonel Hain was a very vigorous character. He was able and well instructed as a motive power man, and had developed into a very efficient operating officer in the field in which he worked. He was a man of great resolution and self-reliance. He was clear-headed and direct in his ways of approaching a question, and of sound judgment. Those who have known him well for some years, and have talked often with him, will probably agree with us that the elevated railroads of New York would have been much more popular than they are if Colonel Hain could have had his way. He was loyal to his superiors and discreet in conversation, and he very seldom said things that revealed differences of opinion within the counsels of the company; but it must have been obvious to those who knew him well that, if he could have controlled matters, there were many particulars in which the elevated railroad service would have been made more agreeable to the public, and we must all admit that he did magnificently with the means at his disposal. He was not conciliatory and did not think it his duty or make it his policy to spend much time with the reporters of the daily newspapers. Probably it would have been well for the elevated railroads to have had a diplomat to meet the newspaper men, but Colonel Hain was not made that way.

An able and devoted man, a loyal servant and a good friend is gone in the most untimely and unfortunate death of Colonel Hain, and he would have asked no better epitaph than the simple record of his services to the people of New York and to the elevated railroads of that city. No other railroad system in the world, great or small, carries so many passengers, and probably none other carries them so safely. In 1893 the average movement was over 600,000 a day, and in the 16 years that Colonel Hain had charge of the working, the roads carried 2¼ billion people, and not one passenger has ever been killed in a train on the system.

ELECTIONS AND APPOINTMENTS.

Augusta Southern.—At the annual meeting of the stockholders of this company held at Agusta, Ga., last week, the old Board of Directors was re-elected with the following officers: President, James U. Jackson; Vice-President, P. H. Langdon; Secretary and Treasurer, F. W. Schofield.

Baltimore & Ohio.—W. T. Manning, Chief Engineer, announces the following changes in his department, effective May 10: The jurisdiction of Mr. B. T. Fendall, Divisional Engineer, will embrace the Philadelphia Division, and the Washington and Metropolitan branches, with headquarters at Baltimore. Mr. W. A. Pratt, Division Engineer, transferred from the Philadelphia to the Baltimore Division, with headquarters at Martinsburg.

Mr. W. N. Mitchell has been appointed commercial freight agent of the road, with headquarters at Atlanta, Ga. Mr. Mitchell has for a number of years been connected with the Baltimore & Ohio as western freight agent at Pittsburg, but was previously connected with the Richmond & Danville road.

Beech Creek.—Shareholders of the road at their meeting last week re-elected M. E. Olmstead, President and Cornelius Vanderbilt, William V. Vanderbilt, George J. Magee, George F. Baer, William W. Betts and James Kerr directors.

Bradford Central.—The incorporators of this new Pennsylvania company are: J. A. Hill, Powell, Pa.; Hugh Crawford, J. N. Beardsley and J. W. Stowe, of Canton, Pa.; John M. Rahm, E. J. Angle, E. Whalen, F. A. Sawyer, Joseph Ochs, all of Towanda, Pa., and A. F. Chapman, Watkins, N. Y., President.

Burlington, Cedar Rapids & Northern.—The various leased lines of the company held their annual meeting in Cedar Rapids, Ia., last week. All the old Directors were re-elected, and they chose the following officers: C. J. Ives, President-General Manager; J. C. Broechsmit, Vice-President; W. P. Brady, Secretary; W. F. White, Chief Engineer.

Central of New Jersey.—The annual election of the Company of New Jersey was held on May 15. The following Directors were elected: George F. Baker, Harris C. Fahnestock, James A. Garland, Henry Graves, Charles Lanier, Henry W. Maxwell, J. Rogers Maxwell, Samuel Sloan, and Frederick G. Bourne, of New York. Mr. Bourne is the only new member. He succeeds Edward D. Adams of New York.

Chesapeake, Ohio & Southwestern.—Mr. M. Gilleas, Assistant General Superintendent of the Illinois Central, recently appointed Assistant General Manager of this road, now controlled by the former company, established headquarters at Louisville, Ky., on May 1. Heretofore his headquarters have been at Memphis, Tenn.

Delaware & Hudson.—At the annual meeting of the stockholders on May 12 the following directors were elected: James Roosevelt, Robert M. Olyphant, William M. Tillinghast, Alfred Vansantvoord, James A. Roosevelt, Alexander E. Orr, Cornelius Vanderbilt, Chauncey M. Depew, James W. Alexander, James R. Taylor, Benjamin Brewster, Horace G. Young and John Jacob Astor. The Board is unchanged from last year, except that John Jacob Astor takes the place of John A. Stewart, retired.

Dillsburg & Mechanicsburg.—At Mechanicsburg last week these directors were elected: President, Thomas B. Kennedy; directors, Thomas B. Kennedy, Edward B. Watts, Henry McCormick, J. Herman Bosler, William Penn Lloyd, Joseph Milleisen, Christian Bender.

Fargo & Northwestern.—The officers of this new company in North Dakota are: H. F. Miller, G. S. Barnes, R. S. Lewis, O. J. Delendreciew, Alex Stern, Martin Hector, William D. Sweet, J. W. Smith, Thomas Baker, Jr., John W. Vonneida, J. R. Folsom, Evan S. Tyler and James Holmes, of Fargo, N. D. The officers are: President, Martin Hector; Vice-President, J. W. Smith; Treasurer, John W. Vonneida; Secretary and General Manager, Evan S. Tyler.

Lake Shore & Michigan Southern.—At the annual meeting of the stockholders in Cleveland on May 6, Cornelius Vanderbilt and D. O. Mills, of New York, and James H. Reed and J. M. Schoonmaker, of Pittsburgh, were elected directors to serve three years. Mr. Schoonmaker succeeds the late Rasselas Broun.

Mexican Central.—The Board of Directors of the Mexican Central Railway Co., Limited, elected at the annual meeting of the stockholders, held on May 6, at Boston, organized by the election of the following officers: A. A. Robinson, President; R. R. Symon, Vice-President; E. Rollins Morse, Vice-President and Chairman Finance Committee; J. T. Harmer, Clerk and Comptroller; C. A. Browne, Treasurer and Trans. Agent; H. R. Nickerson, General Manager; W. A. Frost, Auditor, and Jay A. Henry, Assistant Treasurer.

Newtown Creek Terminal.—The incorporators of this company are: T. R. Chapman, Almet F. Jenks, Frank Bailey, Charles R. Smith, W. J. Logan, G. W. Kenyon, Harold Bunker, A. W. Waldron, Jr., of Brooklyn; Louis Windmuller, Henry Brookfield, Albert Winter, C. F. Levin, L. F. Reed, Wallace Murray, of New York City, and L. D. Speir, of Orange, N. J.

Norfolk & Western.—At the annual meeting of the railroad and allied corporations in Roanoke, Va., on Wednesday of last week, F. J. Kimball was re-elected President of the Norfolk & Western and the Roanoke Machine Works, and the old Board of Directors was re-elected.

Ohio River.—Walter Layman has been appointed Master Mechanic of the Ohio River road, vice A. L. Courtrite, resigned.

Philadelphia, Wilmington & Baltimore.—J. T. Wallis has been appointed Assistant Road Foreman of Engines on the road, with headquarters at Wilmington.

Rutland.—J. M. Keenan has been appointed Auditor of Traffic Accounts with offices in Rutland, Vt.

Southern.—Mr. W. W. Finley having resigned as Third Vice-President of this company to take position elsewhere, the vacancy will not be filled until further notice. The Traffic Manager will report to Mr. Wm. H. Baldwin, Jr., Second Vice-President, who will have the general control of the Traffic Department.

Wilmington & Northern.—The company has elected these officers and directors last week: President, Henry A. Dupont; Secretary, E. B. Shurter; Superintendent and Treasurer, A. G. McCausland; Chief Engineer, F. L. Hills; General Freight and Passenger Agent, Browness Briggs; Directors, Henry A. Dupont, George Brooke, Dr. Charles Huston, A. L. Foster, John S. Gerhard, L. Heber Smith and H. K. Kirk.

RAILROAD CONSTRUCTION,
Incorporations, Surveys, Etc.

Asheboro & Montgomery.—President A. F. Page, of the Aberdeen & West End road, who has charge of the construction of this new North Carolina road, has 125 convicts at work. Active work began on the roadbed last week, and the road is to be ready for operation by Jan. 1. The road is being built from Starr to Asheboro, N. C., 25 miles.

Boothbay & Wiscasset.—A proposition has been made to build and equip a narrow-gage road from tidewater at Boothbay Harbor, Me., north to Wiscasset. The road is to be completed for travel Nov. 1 next. As surveyed, the route is about 15 miles long, and passes through the towns of Boothbay Harbor, Boothbay and Edgecomb, to Wiscasset. At the latter town connection would be made with a narrow-gage road built for about 20 miles north.

Bowling Green & Northern.—Efforts are being made to revive this project in Kentucky on which some work was done four years ago. The road would begin at Bowling Green and extend northerly for about 50 miles, connecting the Louisville & Nashville and the Chesapeake, Ohio & Southwestern by a shorter route. Surveys have been completed and much of the right of way obtained, and the promoters state that they will be ready to receive bids in the near future.

Bradford Central.—This company was incorporated at Harrisburg, Pa., May 7, to build a road 20 miles long, from the borough of Canton, in Bradford County, to the borough of Monroe, in the same county. The capital stock is to be $200,000. A. F. Chapman, of Watkins, N. Y., is the President.

Butler & Pittsburgh.—The directors of this new railroad met at Pittsburgh last week and decided upon the route. The road will parallel the Pittsburgh & Western for four miles out of Butler to the mouth of Thorn Creek. At this point the route will extend up Thorn Creek to Summit near Culmersville, and thence to Deer Creek. The creek will be followed to Harmarsville, thence to Montrose. At Montrose a bridge will be built across the Allegheny River. From this point, which is at the mouth of Negley's run, the route is not decided upon. The contract for grading was referred to a committee composed of Judge J. H. Reed, President J. T. Odell and T. H. Given. The contracts for grading will be let on May 20.

Cleveland, Lorain & Wheeling.—General Manager Woodford, and other officers, made a tour of inspection over the road last week, to decide which of the proposed improvements in the roadbed and buildings should be taken up first. The company has issued bonds for $1,000,000 for improvements. A new station will be built at Bridgeport; a steel bridge will replace the wooden one over Wheeling Creek, at Bridgeport, just south of the station, and the trestle work over Wniskey Run, between Bridgeport and Martin's Ferry. All trestles on the river division will be filled in wherever practicable. Along the main line there are 30 wooden bridges to be replaced, and at numerous points the tracks are to be relaid and the line straightened. There are five tunnels to be arched with masonry.

Cumberland Valley.—Representatives of this company are reported to be again going over the abandoned route of the South Pennsylvania securing right of way abutting on the partly completed tunnels near Roxbury, Tuscarora Valley, Rayshill and other places along the old route. This activity is taken as an indication that the Pennsylvania and Cumberland Valley have decided to build the line from a connection with the last named road at either Richmond Furnace or Newville. The work has been contemplated for some time, but has been postponed, owing to the stringency of the money market.

Denison & Northern.—The various questions relating to the construction of this road, which have been before the United States Court in the Indian Territory, have been settled. Several hundred men are engaged in the construction work on the line between Doherty and Lehigh, and the entire road, 104 miles in length, is to be completed to Denison, Tex., by Jan. 1. Receiver's certificates amounting to $1,144,000 for building and equipping the line have been authorized.

Fargo & Northwestern.—This company was recently organized at Fargo, N. D., by residents of that town to build a railroad from Fargo, northwest through Hunter, and crossing three branches of the Great Northern, to Sherbrook, the county seat of Steele County, and now without railroad connections.

Golden Circle.—This company has filed articles of incorporation in Colorado, being another Cripple Creek railroad project. It will connect Victor and Cripple Creek via Gold Field, Independence, Battle Mountain, Iron Clad, Globe and Gold Hills, a distance of 25 miles. The directors are C. F. Elliott, Daniel Lee Webb and Silvester J. Smith, D. H. Moffatt and Eben Smith, of Denver.

Houston, East & West Texas.—About 27 miles of this road out of Houston, Tex., will be relaid immediately with 60-lb. rails. The rails are shipped in barges from the Carnegie mills to Delta, La., and will then be hauled over the Vicksburg, Shreveport & Pacific road to Houston. The old iron and light steel rails which will be taken up will be used to build lumber branches. Rails for 10 miles of road have been leased to the Timpson Lumber and Manufacturing Co., to extend its lumber road to Carthage, Tex., where it will connect with the Long View & Sabine Valley road which reaches Long View, Tex.

Illinois Midland.—This new Illinois company has been organized by the election of Thomas W. Scott as President, E. M. Rice Secretary, and E. C. Rice Treasurer. The projectors have not definitely announced their plans regarding new construction. The charter is a liberal one, and allows a line to be built across the state from Terre Haute, Ind., to St. Louis.

Kings County Elevated.—Justice Gaynor, of the Supreme Court, in Brooklyn, has granted an order directing the Kings County Elevated and Brooklyn & Brighton Beach Companies to show cause why they should not be enjoined from completing the short section of the elevated structure through Franklin avenue and Lefferts place, Brooklyn, which is to connect both roads. The proceedings are instituted by a property holder. The work of constructing the connecting link between the roads was begun some months ago, and it was expected to have the line completed in time for the summer traffic to Coney Island.

Lehigh & Lake Erie.—This company has been organized by officers of the Lehigh Valley to build a branch 10 miles long, from a point on the present line, in the town of Cheektowaga, Erie County, southerly, westerly and northerly through the towns of Cheektowaga and West Seneca to what is known as Tifft Farm, in Buffalo. The directors are Elisha P. Wilbur and Robert H. Sayre, of South Bethlehem, Pa.; Charles Hartshorne and others connected with the Lehigh Valley.

Little Kanawha Valley.—The county court of Wood County, W. Va., has ordered a special election on June 9 to vote on the proposition to issue $175,000 of county bonds. This company was incorporated last week to build a road up the Little Kanawha Valley, from Parkersburg to the Gilmer County coalfields.

Mexican International.—Mr. C. P. Huntington has just received from the Mexican Government a concession of value to this company. During each period of two years from the promulgation of the contract (May 1896) the company must construct at least 200 kilometers of railroad, and the lines stated in the contract must all be completed before May, 1906. In consideration of the fact that the contract carries no subsidy, the Mexican Government agrees not to subsidize any other line paralleling the present line of the International or located within 40 kilometers of it. The new roads which the company binds itself to build are as follows: From City of Mexico to Piedras Negras, from a point on the main line to some port on the Gulf of Mexico between Matamoras and Vera Cruz, and from a point on the main line to a Pacific port between Mazatlan and Zihuatanejo. The road is to have the right of building branches not exceeding 170 kilometers in length to any of the above new roads.

Missouri, Kansas & Texas.—Officers of the company were at San Antonio, Tex., last week, to confer with a committee of San Antonio citizens upon the route of the proposed extension of the road into the city, and also to secure land for terminal facilities. When these matters are satisfactorily adjusted work of construction on the extension will be commenced at San Marcos and San Antonio. The line will be about 50 miles long. The International & Great Northern now has a line between these towns.

Mobile, Jackson & Kansas City.—The local subscriptions of $125,000 to the stock of this company, which the projectors have asked, have been secured at Mobile, Ala., and Jackson, Miss. It is now stated that the grading out of Mobile, Ala., will be resumed immediately and the road completed into Jackson, Miss., as projected several years ago.

New Orleans & Western.—It is stated that this company is preparing to begin a survey for a Texas division of its road, which now ends at the Mississippi River, above New Orleans. The company's present charter provides for such a division, and it is stated that it will be located about midway between the present lines of the Texas & Pacific and the Southern Pacific west of New Orleans, crossing the Texas state line between Shreveport and Sabine, passing through a country with much timber and well settled in certain districts.

Newtown Creek Terminal.—This company was incorporated in New York last week to operate a steam railroad three miles long in Brooklyn, from a slip on Newtown Creek Canal to various factories. The capital is $100,000. The directors are given in another column.

Pecksport Connecting.—The company has been granted the necessary authorization by the New York State Railroad Commission to construct a four-mile

road in Madison County, between Pecksport and Morrisville, N. Y. The road is to connect two points on the New York, Ontario & Western, and is constructed for the purpose of avoiding heavy grade at Eaton. The characteristics of the work are described in another column.

Philadelphia & Reading.—The United States Court has approved the application of the receivers for permission to condemn property for the construction of two connections, one of the Plymouth branch, with the North Penn road, at Oreland, Pa., and the other of the North Penn with the New York line, at Jenkintown, near Philadelphia. The estimated cost of the whole work will not exceed $65,000. The connections are proposed to relieve the main line from coal trains from the Falls of the Schuylkill to Wayne Junction and Port Richmond, and to save much loss of time to coal trains especially, now resulting from the heavy traffic over this portion of the road.

Pittsburg & Eastern.—The company has practically completed the grading of the first 15 miles from its eastern terminus at Mahaffy, Pa., and the work of laying the rails is now in progress. The engineers are arranging the details preparatory to inviting bids for the grading of 50 miles more, from Cush Creek to Saltsburg. The line is being built in a substantial manner, and while the grading is for a single track, all heavy excavations and bridge masonry are made to accommodate two tracks.

Pueblo, Victor & Cripple Creek.—James B. Orman, James N. Carlile, of Pueblo, the Colorado railroad contractors, are the chief projectors of this road, one of the many companies organized to build a railroad between Pueblo and Cripple Creek. The plan involves the building of a belt line to connect with the various mines at the Cripple Creek district, 100 miles of new road altogether.

Salt Lake & Pacific.—A contract for grading 30 miles of the first section of this road west of Salt Lake City was awarded last week to J. C. Watson & Brothers, of Salt Lake City, by the Utah & Pacific Improvement Co., which controls the property. This contract is the first work on the proposed Deep Creek extension which is to be built through Utah to Nevada.

Short Line Railway Company of West Virginia.—The county court of Wetzel County, W. Va., was in special session three days last week, hearing arguments of the representatives of this company and the Monongahela River road with regard to the granting to one or the other, of a right of way, and financial assistance for a road from Clarksburg, W. Va., to New Martinsville, W. Va., by way of the Fishing Creek Valley. A special election for June 15 was ordered on a proposition to issue $50,000 bonds in aid of this company. In return, the company agrees to begin operations within 30 days after the bonds are issued. The line from Clarksburg to New Martinsville has been surveyed by both companies, and work can begin as soon as either is ready. It is given out this week that the Monongahela River Company will begin work without waiting for local assistance. The building of the line will be important as a connecting link between the Baltimore & Ohio and the Ohio River road, and an independent outlet for the coal mined by the Monongahela River Co., which is the largest operator in the state.

Electric Railroad Construction.

Albany, N. Y.—On May 12, the State Railroad Commission granted the following applications for permission to build three new electric roads: The Plattsburg Traction Co., which proposes to build a road from Plattsburg to Hotel Champlain. The Mountain Lake Electric Railway Co., to build a road from Gloversville, N. Y., to Mountain Lake. The Ballston Terminal Railroad Co., to build an electric road, extending 12 miles up the Kayaderosseras Creek, to carry passengers and freight.

Bath, N. Y.—Highway Commissioner Hubbard has granted a franchise to the Bath & Kenka Electric Railway Co. Work is to be commenced within two weeks.

Birmingham, Ala.—The Birmingham Railway & Electric Co. opened its new line between East Lake and this place, a distance of five miles, on May 1.

Corry, Pa.—An electric street railroad will be built in this city by capitalists from Warren.

Cape May, N. J.—Articles of incorportion have been filed by the Cape May Transportation Co. for leasing and operating the Cape May electric roads, located on the beach front.

Elizabeth, N. J.—The electric road from Port Richmond to a point opposite Elizabethport is being constructed. This road when finished will connect with a ferry that will run between Staten Island and Elizabeth.

Fredonia, N. Y.—The right of way has been secured to build an electric road from this place to the state line of Pennsylvania parallel with the Lake Shore and Nickel Plate roads, a distance of nearly 30 miles.

Hartford, Conn.—The final right of way was signed on May 5, granting the Manufacturers' Street Railroad the right to build an electric road for carrying freight from Cedar Hill along the east shore of Mill River, through River street. It will be of great benefit to the business interests of the city.

Long Branch, N. J.—The line from Asbury Park to Pleasure Bay, via Long Branch, was opened May 8. Eventually the road will be extended beyond Asbury Park.

New Orleans, La.—A franchise to build six miles of electric road in the parish of Jefferson has been granted to R. R. Zell, A. E. Springall, A. Bonnabel and others.

Niles, Mich.—An electric line is to be built from South Bend to Benton Harbor, via Niles, Buchanan and Berrian Springs, a distance of about 30 miles.

Norristown, Pa.—The Schuylkill Valley Traction Co. has awarded the contract of extending its road from Troope Village to Collegeville, a distance of five miles, to W. A. Cullum, of Paterson, N. J. Work was begun on last Monday.

Parkersburg, W. Va.—The work of equipping with electricity and remodeling the lines of the Park City Street Railway Co., which cover all the principal streets of the city, will begin June 5.

Pensacola, Fla.—The Pensacola Terminal Co. has been granted an additional franchise to construct a complete line of electric street railroad in this city. The work must be begun within 90 days and finished by September, 1897. Bonds of the company to the amount of $185,000 are held by Baltimore capitalists.

Portland, Me.—The extension of the Portland & Cape Elizabeth Railroad Co.'s tracks from Monument Square to the Portland & Rochester depot will be started within a week. The contract has been let to C. W. Blakeslee & Son, of New Haven, Conn.

Red Bank, N. J.—A franchise has been granted the Atlantic Highlands, Red Bank & Long Branch Electric Railroad Co. to continue its electric line through the streets in the upper part of the town, thus giving the town a direct line to Atlantic Highlands.

Romceverte, W. Va.—The West Virginia Northern Electrical Co. has given the contract for the construction of a road between Romceverte and Lewisburg, a distance of 14 miles. It is proposed to carry freight from the Chesapeake & Ohio.

St. Louis.—Work is nearly completed on the Jefferson Barracks extension of the Southern Electric Railway.

Wheeling, W. Va.—The contract for the construction of the Wheeling Suburban Electric Railway has been awarded to Brown & Hazlett, engineers, of Wheeling.

White Plains, N. Y.—The work of building the extension of the White Plains & Elmsford electric road, between this village and Mamaroneck, has been begun.

Williamsport, Md.—Plans for the new power house of the Hagerstown Electric Railroad to be built at this place are being prepared by Foose & Lloyd, of Harrisburg. The company expects to open the line between Hagerstown and Williamsport by July 4.

GENERAL RAILROAD NEWS.

Buffalo, Rochester & Pittsburgh.—The large interests of the Bell, Lewis & Yates Coal Co., of Rochester, N. Y., in the coal mining districts of Clearfield and Jefferson counties in Northern Pennsylvania was sold last week to the Rochester & Pittsburgh Coal and Iron Co., the capital stock of which is all owned by this railroad. The property transferred includes nearly 12,000 acres of coal lands, the mines having a capacity of 10,000 tons daily. There are in addition 100 coke ovens. The Bell, Lewis & Yates Company has been one of the largest bituminous coal mining concerns in the country. In addition to the coal properties the purchase includes a few railroads the Reynoldsville & Falls Creek, 15 miles long, from Falls Creek to Rathmel, Pa., and a three-mile branch road called the Falls Creek from a town of that name to mines.

Cape Fear & Yadkin Valley.—An examination of the physical characteristics of this road has just been completed for the New York Reorganization Committee by a body of engineers, including Col. Henry T. Douglas, of Baltimore, recently with the Baltimore & Ohio; William Parsons, of New York, and Mr. William S. Dunn, of Virginia. Col. T. M. R. Talcott, of North Carolina, will make a similar examination at the request of the Baltimore Reorganization Committee, these various inspections being made to give a basis for determining the relative value of the three divisions of the road.

Cincinnati, Lebanon & Northern.—The recent transfer of the control of this road to a firm of Cincinnati brokers appears to have been made in the interest of the Pennsylvania road. The road is about 32 miles long, extending north from Cincinnati to Lebanon, O., and the control of the road by the Pennsylvania would give that company an independent entrance into Cincinnati from Dayton and would shorten the present Dayton and Cincinnati line of the Pennsylvania about 15 miles. The road has valuable terminal facilities in Cincinnati, but it is stated that these will be further developed by the Pennsylvania and a new passenger station erected at Court street and Broadway, the site of the present station of this company.

Green Bay, Winona & St. Paul.—This road was sold at Green Bay, Wis., on May 12. The main line was purchased by M. T. Cox and G. W. Wickersham, of New York, representing the reorganization committee of the bondholders, for $1,000,000. The La Crosse branch was purchased individually by M. T. Cox, of New York, for $20,000.

Jacksonville, Louisville & St. Louis.—The foreclosure sale of this road has been fixed by Judge Allen, of the United States Circuit Court at Springfield, Ill., for June 10, at Jacksonville. The order of sale was made to carry out the decree recently secured in the suit of Henry W. Putnam and the Finance Company of Pennsylvania to foreclose a mortgage of $1,471,000.

Jupiter & Lake Worth.—This road, eight miles long, in Southern Florida, was sold at the court house in Juno, Fla., on May 5 to Sabel Brothers, of Jacksonville, Fla., for $4,375. The road runs along the Florida coast from Jupiter to Juno across a stretch of land separating the Jupiter River from Lake Worth, a long narrow body of water close to the coast line. It was built in 1890 and was operated by the Jacksonville, Tampa & Key West, but maintaining a separate organization. For some time past no trains have been run, and the purchasers will take up the rails. The new line of the Florida East Coast, just west of this road, extends for some distance below Juno.

Little Rock & Fort Smith.—The foreclosure sale of the road, which was advertised to take place at Little Rock on May 12, has been postponed to Nov. 1. This is the sixth postponement.

Memphis & Charleston.—The Reorganization Committee, of which Mr. Adrian Iselin, Jr., is Chairman, announces that the plan of the committee has been accepted by over 95 per cent. of the bondholders of the several seven per cent. mortgages and has been declared operative. The committee issued a statement last week advising security holders against depositing their securities under the terms of reorganization recently proposed by the committee of which Mr. Simon Borg is Chairman, claiming that the plan proposed by the Iselin committee offered the most favorable terms for security holders.

New York Central & Hudson River.—The company reports gross earnings for April of $3,412,848, a decrease of $37,381, and for the quarter ended March 31 as follows;

	1896.	1895.	Inc. or Dec.
Gross earn	$10,284,910	$9,835,818	I. $448,092
Oper. exp	7,029,327	6,815,976	I. 213,341
Net earn	$3,254,583	$3,019,842	I. $234,741
Dividend	$1,000,000	$951,283	I. $45,717
Deficit	389,915	581,919	D. 191,974
For nine months to March 31:			
Gross earn	$34,292,312	$31,994,868	I. $2,297,444
Net earn	11,073,825	10,685,175	I. $388,650
Surplus	150,795 (def.)	559,907	I. $710,702

Northeastern (Georgia.)—This road, which is owned by the State of Georgia, was leased last week to E. Richards & Co., for a rental of $186,000 a year. It is stated that the new lessees will extend the road into the marble quarries at Northern Georgia. This road was formerly operated by the Richmond & Danville, but it was sold in April, 1895, and then purchased by the state, which had endorsed the first mortgage bonds of the company. It extends from Athens north to Lula, about 40 miles, and has been operated by the State of Georgia since November 1893, when default was made in the payment of interest on the first mortgage bonds.

Northern Pacific.—Messrs. J. P. Morgan & Co. announce that they have made arrangements with the bondholders of the Northern Pacific & Manitoba Terminal and of the James River Valley road, both heretofore operated by the Northern Pacific, by which these lines will be retained by the new company. The bondholders of each company receive 50 per cent. in new Northern Pacific 3 per cent. bonds and 50 per cent. new preferred stock for each bond of the subsidiary companies.

The deposits of preferred stock under the reorganization plan now amount to about 95 per cent. of the total issue and about $16,000,000 of the first mortgage bonds have assented to the terms offered the holders of those bonds in the plan.

An installment of $3 a share on the preferred stock and $5 a share on the common stock deposited under the reorganization agreement, will be payable on May 26.

The earnings for March and the fiscal year are reported as follows by the railroad company:

	1896.	1895.	Inc. or Dec.
Gross earn	$1,314,549	$1,239,562	I. $74,987
Oper. exp	874,577	797,319	I. 77,258
Net earn	439 972	442,243	D. 2,271
P. c. exp. to earn	66.53	64.32	I. 2.21
Nine Months to March 31st:			
Gross earn	$15,622,786	$13,531,593	I. $2,091,188
Oper. exp	8,674,917	8,537,984	I. 136,933
Net earn	6,947,869	4,993,614	I. 1,954,255
P. c. exp. to earn	55.53	63.10	D. 7.57

In these figures miscellaneous income is not included and taxes are not deducted.

Pennsylvania & New England.—Contractor James Clark of Philadelphia, has filed a claim of $34,084 at Easton against the company, on which execution has been issued. This claim is for grading and building the road for a distance of 1½ miles in the upper end of Northampton County, Pa. Clark obtained judgment June 17, 1887 against the company, but never received the money. The judgment with interest amounts to over $50,000.

Petersburgh & Asylum.—This road, about 3½ miles long, out of Petersburgh, Va., operated by light engines, has been sold to John L. Williams & Sons, bankers, of Richmond, Va., and W. M. Hobliston, of Petersburgh, Va., for $21,000. The road has been operated by a receiver for some time, and it is probable that the new owners will change the motive power to electricity.

Rio Grande Western.—A statement of the present status of this company, bearing especially on its financial condition and the position of its first mortgage bonds, has been issued by Spencer Trask & Co., of New York. That firm has long been identified with the company's financial management, and two of its members are directors. The statement points out that the company's lines embrace 520 miles of road operated, of which 18 are leased, and two miles owned jointly. They form a connecting link between the important systems having their western termini in Colorado, and the Pacific roads. The volume of through traffic has, in spite of business depression, shown a natural rate of growth, but the greatest development has been in the local business, which has always constituted the chief source of revenue. In the fiscal year closing June 30, 1895, 70 per cent. of the tatal tonnage originated upon the company's own lines, and this unusual ratio for a road so situated is ordinarily exceeded. It is the only outlet for the product of practically unlimited coalfields, which contribute, including the coke product, upward of 40 per cent. of the freight. Ores constitute the next largest percentage in the classification of commodities, but they yield only from 10 per cent. to 15 per cent. of the total, a much smaller percentage than is generally supposed.

The condition of general business depression throughout the country caused a falling off in passenger traffic, mainly through, during the year 1895, of about $250,000 from the figures of 1892. The return to even higher figures seems beyond question when the business of the country at large resumes its normal condition. The property is ably managed, and has been maintained in good physical condition. The property is now in a higher state of efficiency than at any time in its history. The company has no equipment or floating obligations. The construction of several important and profitable branches was financed through the sale of preferred and common stock, thus increasing income without adding to fixed charges, and placing in the treasury of the company, as valuable assets, $1,950,000 first mortgage bonds upon this new mileage. There are also in the treasury $1,000,000 stock of the Western Express Co., which is leased at a rental equivalent to four per cent. at present, increasing yearly, also $800,000 of these first mortgage four per cent. bonds, and an authorization to issue $1,250,000 additional of the company's own preferred shares.

The amount of the mortgage is limited to $16,000,000 of which $15,200,000 are outstanding and distributed. A very large proportion of the entire loan has been taken for permanent investment.

The following table of surplus balances, after charges of every nature, for the several fiscal years (ending with June 30), since the reorganization and change from narrow to standard gage, contrasts the course of income in normal years with the prolonged period of depression:

*1891.	*1892.	*1893.	1894.	1895.
$306,137	$331,450	$225,910	$9,350	$40,261

Six months only, to January 1, 1896, $222,272.

*Preferred stockholders received 5% in years indicated

The net receipts, applicable to interest, for the two months of January and February were $100,402 for 1896, against $74,806 for 1895, a further increase of 34 per cent.

Rutland.—The receivers of the Central Vermont surrendered this road to its stockholders on May 7 in accordance with the order of the United States Circuit Court. The road will hereafter be operated as an independent line, and the report that it would be controlled or operated by the Fitchburg or the Boston & Maine is denied by the company's directors. The Rutland is a line 120 miles long, extending from Bellows Falls, on the Central Vermont, north through Rutland to a connection with the Central of Vermont just north of Burlington. Before the receivership of the latter company its through freight was sent over this line, but soon after Messrs. Hays and Smith were made Central Vermont Receivers the through traffic was diverted and now goes over the Central Vermont's own line, through White River Junction. The Rutland road is not very well supplied with rolling stock, and the new management will at once arrange for new equipment.

Toronto, Hamilton & Buffalo.—Goode & Co., Chicago contractors, have obtained a writ against this company, the Dominion Construction Company and E. B. Wingate for $108,391. Goode & Co. built the Welland division of the road, the contract price for which was $300,000, and the sum named above is alleged to be due them on the contract.

Electric Railroad News.

Calumet, Mich.—The stockholders of the Calumet Electric Street Railway Co. have authorized an increase in the capital stock of that corporation from $500,000 to $5,000,000.

Houston, Tex.—The property of the Houston City Street Railway Co., which operates 40 miles of track, was disposed of at public sale on May 5. A. H. Hayward, General Manager of the company, was authorized by the stockholders to offer $100,000, which bid was accepted.

Moundsville, W. Va.—Howard Hazlett, of Wheeling, W. Va., has been made permanent receiver of the Moundsville & Benwood Electric Railway Co., with power to complete the 14 miles of road.

TRAFFIC.

Traffic Notes.

Beginning May 17 the Brooklyn Elevated Railroad will run trains through to Coney Island every 15 minutes. The fare is 10 cents each way.

All the Canadian railroads, with the exception of the Intercolonial, have signed an agreement to charge an excess baggage rate of fifty pounds on each bicycle.

With the new time-table next week the Pennsylvania will run an express train from Philadelphia to Pittsburgh which will go through by daylight. It leaves Philadelphia at 8:23 and reaches its destination at 7:20.

The railroads of the Southern States Freight Association have appointed a committee, composed largely of Eastern agents, to consider a plan for apportioning freight traffic from Eastern cities to the Southern territory.

A freight bureau has been organized at Birmingham, Ala. The Commissioner is Mr. L. Sevier, formerly with the Alabama Great Southern Railroad. Birmingham has had freight bureaus once or twice before which did not last long.

A vessel man at Buffalo says that that port has lost about three million bushels of grain this year in consequence of the shallowness of the water in the harbor. Vessels have had considerable difficulty from grounding. The lost grain went to Fairport and Erie.

"Sam Jones rates" will be made by the Houston & Texas Central to Austin this week, which means that reduced rates are granted to persons going to the religious meetings held by Jones. The General Passenger Agent says that Sam is a great business getter for the railroads.

The Ohio Central and the Cleveland, Cincinnati, Chicago & St. Louis announce through trains, one day and one night, between Cincinnati and Toledo by way of Kenton. The distance between these cities by this line is only six miles more than over the Cincinnati, Hamilton & Dayton.

A car service association has been organized at Kansas City, and it will go into operation at once, though the Chicago & Alton and the Chicago Great Western decline to join. The Alton promises to enforce the rules. The manager is Mr. Sanford, heretofore Chief Clerk of the St. Louis Car Service Association.

The Ann Arbor Railroad is going to put on a through night passenger train between Toledo and Frankfort, the termini of the line, which places are 300 miles apart. The train is to take three carloads of freight, one car to be left at the beginning of each division and thence taken forward by the local freight on the following morning.

The Wisconsin & Michigan Railroad, which carries freight cars from South Chicago to Peshtigo on large floats, now has a small float, carrying nine cars, which will run between the South Chicago terminus and the business wharves along the river in Chicago, thus collecting and distributing freight at many convenient points.

The suit against the Pennsylvania, the Erie, the Fitchburg and certain other railroads for discriminating against the Independent Refiners, in the transportation of oil, has now got into the United States Circuit Court, the Interstate Commerce Commission having applied to that court at Pittsburgh, May 9, for an order compelling the roads to refund the overcharges which the Commission several months ago adjudged them liable for.

The Southern Pacific has announced a reduction of 25 per cent. on iron manufactures from Pueblo, Col., to San Francisco, in compliance with the recent order of the Interstate Commerce Commission. The tariff contains the following notice: "These rates are published pursuant to an order of the Interstate Commerce Commission. They are not regarded as affording the carriers a reasonable compensation for the service performed and are accepted under protest."

A large consignment of wool was recently carried from Fresno County, Cal., to San Francisco by wagon, nearly 200 miles. The bales were loaded on two 14-ft. wagons, coupled, drawn by a team of six horses, and the trip was made in eight days, one day being lost on account of rain. The teamster is Mr. E. J. Ames. The consignees say that they calculate a saving of 25 per cent. on the regular Southern Pacific rates by rail. Mr. Ames took a large load of freight on the return trip.

Mr. Richard Lord, of the firm of McFadden Brothers, cotton exporters of Philadelphia, tells a reporter at New Orleans that a strong effort is now making in Texas to induce cotton shippers to agree upon a uniform bale. Cotton men throughout Texas are being seen by agents and urged to make their bales uniformly 28 in. wide and 58 in. long. The cost of changing a press is small, generally not over $5, and if uniformity can be attained it will make the work of compressing much easier.

The elevator companies at Philadelphia have reduced the charges made by them on oats for export, making the rate one cent a bushel, including storage for 20 days. This is intended to put Philadelphia on an equality with Boston, the new rate being the same that has been in force at the latter port for some time past. The merchants of New York have been complaining a good deal at the advantage enjoyed by Boston; now, apparently, they have two cities, instead of one, to complain of on this score.

The Board of Administration of the Southwestern Traffic Association now sits regularly in St. Louis, and it has already dealt with a large number of rate questions. The Seaboard Committee is to be abolished on May 31, but the chairman is authorized to continue an agent in New York City. The adjustment of rates on grain to Galveston and New Orleans, which has been the subject of protracted conferences since the reception of the report of the arbitrators, How and Faithorn, has finally been completed, and the differentials in favor of Galveston have been somewhat reduced, in many cases one or two cents per 100 lbs.

The Board of Trade of Winnipeg has made a strong protest against the freight rates to that city from Fort William over the Canadian Pacific Railroad, which are on the basis of $1.16, first class, whereas last year the first-class rate was 92 cents. It appears that on freight coming to Fort William on the boats of the Canadian Pacific road or of the Beatty line, the rates are lower than those above quoted, and the merchants complain loudly of discrimination. They say that the favored steamers have a great advantage, even at equal rates, and that for the reasonable promotion of the prosperity of Manitoba rates ought to be made which would encourage more Canadian vessels to come to Fort William. The great bulk of grain for Europe which now goes from that port is carried by American vessels.

The managers of the Joint Traffic Association have issued a circular regulating the icing of freight. It does not apply to dressed meat or provisions, nor to dairy lock-up cars; on other property, third class or higher, when there is five tons in a car, if it be a refrigerator, the railroad may furnish the ice, the cost of it being prorated between pro-rating points. For the shipper to furnish the ice and the railroad to pay him for it, is contrary to this order, except where the railroad cannot do the icing. In any case the shipper must be allowed only the actual cost of the ice, not exceeding $3 per ton. When a car arrives at destination with 500 lbs. of ice in it, the same may be delivered to the consignee on payment for it at fifth class rate from point of shipment. Dressed poultry shipped in packages, with ice in the package, must be weighed by the inspection bureaus, when necessary; and between March 1 and Nov. 30, 20 per cent. may be deducted. There is a similar rule for fresh fish from April 1 to Nov. 30.

The Presidents constituting the Board of Control of the Joint Traffic Association met in New York May 8, this being the first meeting since March 19. The Norfolk & Western and the Cincinnati, Hamilton & Dayton companies were represented, and letters were read from Sir William Van Horne, of the Canadian Pacific, and others of the absentees, expressing regret that their engagements prevented attendance, and expressing the warmest sympathy with the purposes of the Association and pledging their co-operation therewith. It was the unanimous sentiment of the meeting that the organization had accomplished extraordinary results, considering the fact that 1,000 subjects had been presented to it since December. The representative of the Norfolk & Western expressed his desire to co-operate with the Association, and two committees were appointed to confer with the companies not now members, with a view of inviting their co-operation. The Commissioner made a statement of the work accomplished by the organization since Jan. 1.

Judge Acheson has filed an opinion in the United States Circuit Court at Philadelphia, deciding in favor of the Lehigh Valley Railroad in the proceedings instituted against the road by the Interstate Commerce Commission in the Coxe Brothers suit. Coxe Brothers & Co. filed a complaint with the Commission against the Lehigh Valley in 1888, and the Commission held that the rates on coal then in force for transportation from the Lehigh anthracite coal region in Pennsylvania to Perth Amboy, N. J., were unreasonable, and lower rates were ordered to be put in effect. The railroad company denied that the rates were unjust and the case came before the court. Judge Acheson says: "The railroad company's report for 1887, upon which the Commission based its estimate, does not furnish the data by which the actual cost of carrying coal from the Lehigh and Mahanoy mines to Perth Amboy can be ascertained. The Commission, therefore, resorted to an estimate of the carrying cost. That estimate, however, rests upon an erroneous principal and is unreliable. The evidence before us is quite convincing; that the actual cost of transporting coal from the Lehigh and Mahanoy regions to Perth Amboy was and is considerably more than 85 cents per ton. Hence the order based on the estimate cannot be sustained, and is not to be judicially enforced." Quoting a recent decision of the United States Supreme Court, Judge Acheson said: "These views decidedly show that the Interstate Commerce Commission is not clothed with the power to fix rates which it undertook to exercise in this case. The petition must be dismissed."

Railroad Freight Rates on Export Cotton.

The decision of the arbitrators in the matter of insurance differentials on cotton for export from Texas points is as follows: "When middling cotton at Galveston is quoted at the figures given in column 1 the through rates via the other gateways are to be higher than the through rate via Galveston by the figures shown in columns 2 and 3 respectively, column 2 relating to New Orleans, Mobile and Pensacola, and column 3 New York, Boston and Philadelphia and ports between Philadelphia and Savannah inclusive:

	No. 1.	No. 2.	No. 3.
	4 1/16 and under	$ 50	$1.00
Over	4 1/16 and under 5 1/16	62	1.50
Over	5 1/16 and under 6 1/16	75	2.00
Over	6 1/16 and under 7 1/16	87	2.50
Over	7 1/16 and under 8 1/16	1.00	3.00
Over	8 1/16 and under 9 1/16	1.12	3.50
Over	9 1/16 and under 10 1/16	1.25	4.00
Over	10 1/16 and under 11 1/16	1.37	4.50

"When the clearances of the Custom House show that the proportion of the cotton taken from Galveston by liners has increased to 50 per cent. of the total quantity exported from or through the port of Galveston, then these differentials should, on demand of either of the three interests concerned in this arbitration, be revised by arbitration or agreement, but such demand should not be made until the total export movement through the port of Galveston for the then current season shall have amounted to 200,000 bales of cotton.

The arbitrators were Richard Lord, D. D. Morey and W. H. Newman. The differentials will be applied beginning June 1, 1896.

The Chicago Stock Yards Switching Charge Sustained.

The right to make a charge for delivering cars to the Union Stock Yards in Chicago has been affirmed by the United States Circuit Court of Appeals. Judge Showalter delivered the opinion. The yards are declared to be independent of the railroads, and are not to be considered as freight stations of the roads that connect with them. The suit was brought by Wilson T. Keenan, and 37 other shippers followed him with intervening petitions. He shipped four carloads of cattle to Chicago from Kansas City, by the Atchison, Topeka & Santa Fe, paid the $2 switching charges under protest, and then applied to the Court for an injunction. Judge Grosscup, in an opinion last summer, held that the yards must be considered practically as the cattle station of the Santa Fe in Chicago. This is now reversed. Judge Showalter says:

"In the case at bar the appellants, with their own engines and switching crew, remove the cars laden with cattle from a point on the Chicago end of their line over the track of the Union Stock Yards and Transit Company to the Union Stock Yards. For this transfer from their own line to the stock yards they charge, as stated on the tariff, $2 per car.

"The $2 a car is not a charge for the use of the inclosures and station fittings at the stockyards, but for moving the cars from the line of appellant's road and over the line of another company (which company exacts from appellants a toll of 80 cents a car) to a point in Chicago on said last-named line. The case is the same as though petitioners themselves owned the stock yards and the delivery station there, and the tracks leading to said station, and appellants charged them $1.20 for transferring a car from appellant's line in Chicago to said stock yards station.

"If facilities for unloading cattle were provided by appellants at their station in Chicago, the showing of the record being otherwise as it is, the fact would be immaterial, since the petitioners' cattle must be taken by appellants to the Union stock yards.

"Appellants' failure to supply unloading facilities at its Chicago terminal station can in no way affect the rights of a litigant who, in view of the question at issue, could in no event have benefited by such facilities.

"It is not suggested, assuming any such charge as is here in question to be legal at all, that the amount is unreasonable. The contention that the carriers must move cattle from their lines of road over the track of the stock yards company to the stock yards without compensation other than as contained in their charges for hauling to points on their respective lines in Chicago, and this is what the claims of these appellees amounts to, is invalid."

Chicago Traffic Matters.

CHICAGO, May 13, 1896.

The railroads have won the long fight over the $2 switching charge at the Union Stock Yards. Judge Showalter has decided that the railroads have a legal right to make a reasonable charge for switching cars to the stock yards: the stock yard is not a live stock terminal of the different roads, but a separate station on the line of a foreign company. The lower courts had held that the yard was a recognized terminal of all roads for this business, and the State Railroad Commission had found against the railroads in every case, but this decision settles the question and the pending cases against the railroads will be dropped.

The Federal grand jury investigation of the alleged dressed beef trust and secret cut rates at the stock yards has fizzled out an account of the inability of the government authorities to serve subpœnas on the persons most wanted. United States District Attorney Black says that the investigation will be taken up again by the October grand jury, but it is doubtful if anything more will be heard of the matter.

The Western lines East of the Missouri River have settled the mileage and ten-ride party ticket questions by agreeing that after June 1 the covers of 2,000 mile books must be redeemed by Chairman Caldwell, of the Western Passenger Association, and that after May 20 ten-ride party tickets for parties from ten to nineteen persons shall be sold for 2½ cents a mile and parties of twenty or more at 2 cents a mile. These tickets will be sold only to "legitimately organized parties."

The Burlington, the Rock Island and the St. Paul have put in lake and rail grain tariffs, quoting rates from trans-Mississippi territory to the Eastern seaboard from three to 5 cents below those previously in effect. The eastbound rail lines are protesting at this action, as the rates practically shut out the Chicago grain shippers who deal in local billed stuff, giving all the advantage to the elevator men, who ship almost entirely by water. The roads named are also absorbing the elevator transfer charges in and around Chicago.

The Chicago & Northern Pacific has made a 25 per cent. reduction in its suburban fares out of Chicago. The reduction applies to all stations and was made to meet the competition of electric street cars.

The Minneapolis & St. Louis has followed the Chicago Great Western and the Wisconsin Central, in accepting second-class tickets in first-class sleeping cars.

The Chicago, Milwaukee & St. Paul has decided to add sleeping cars to its through trains between Chicago and Kansas City.

The Chicago River is proving too shallow for the large vessels that have been put in service during the past two years. Vessels of 5,000 and 6,000 tons, find it almost impossible to navigate this channel, and are being driven to lighter service or to the deep water port at South Chicago.

The agents of the strong eastbound lines are much wrought up over the way the Grand Trunk continues to monopolize live stock and dressed meat shipments. From Jan. 1 to April 30 this road carried 21 per cent. of this traffic, against the Lake Shore's 19 per cent. and the Pennsylvania's 7½. One of the strong lines has asked the board of managers to investigate the matter. Total rail shipments last week, amounted to 64,446 tons, compared with 63,830 tons for the preceding week, an increase of 613 tons, and against 43,931 tons for the corresponding week of last year. Total shipments by water last week amounted to 56,877 tons, of which 54,931 tons were grain. The proportions of the total rail shipments carried by each road were:

Roads.	WEEK TO MAY 9.		WEEK TO MAY 2.	
	Tons.	p. c.	Tons.	p. c.
Michigan Central	5,389	8.4	6,214	9.7
Wabash	6,439	1.0	5,773	9.1
Lake Shore & Mich. South.	8,646	13.4	8,568	13.4
Pitts., Ft. Wayne & Chicago	7,612	11.8	7,699	12.1
Pitts., Cin., Chi. & St. Louis.	6,947	10.8	7,297	11.4
Baltimore & Ohio	5,619	8.7	5,804	9.1
Chicago & Grand Trunk	6,337	9.8	5,761	9.0
New York, Chic. & St. Louis	6,222	9.6	5,362	8.4
Erie	8,100	12.6	9,517	15.0
C., C., C. & St. Louis	3,144	4.9	1,805	2.8
Totals	64,446	100.0	63,830	100.0

Of the above shipments 1,790 tons were flour, 30,918 tons grain, 10,922 tons provisions, 9,249 tons dressed beef, 1,915 tons butter, 1,385 tons hides, and 5,517 tons lumber.